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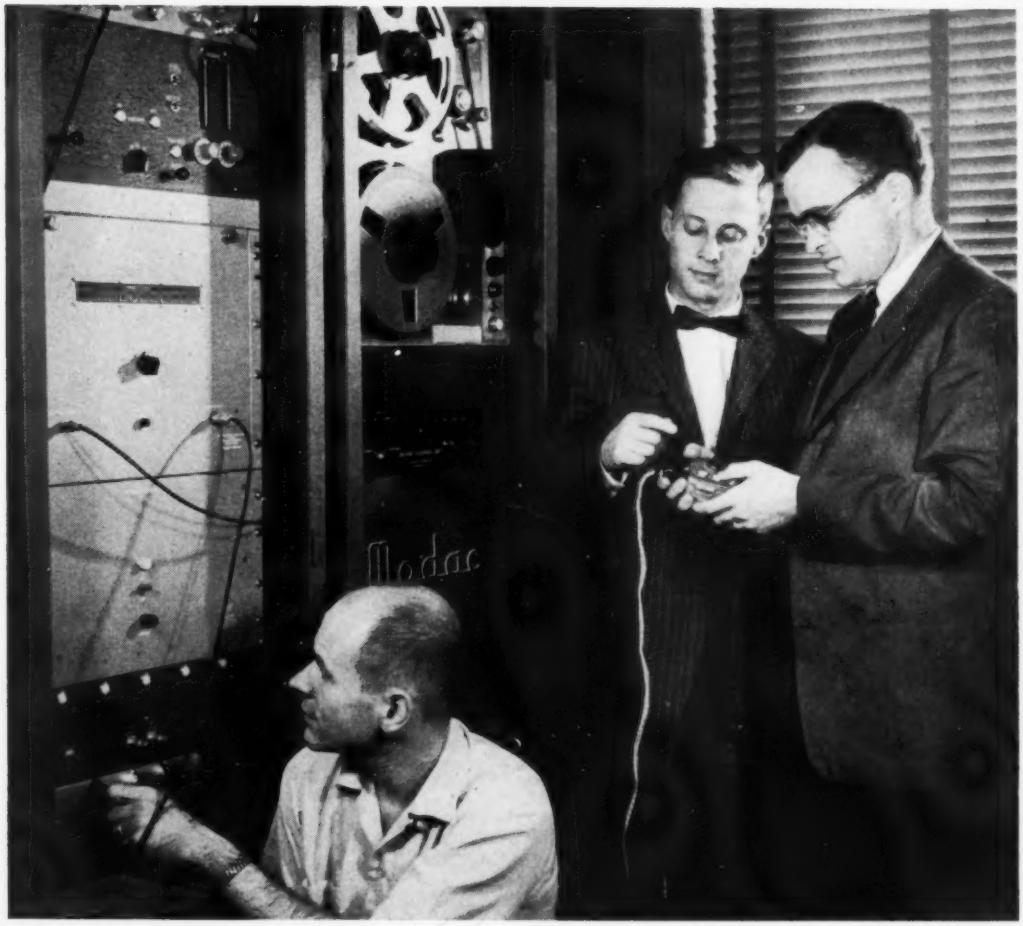
Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY



TRANSMISSION TESTING

Equipment designed at Bell Telephone Laboratories and developed by Modac Division of Airborne Instruments Laboratory permits more economical testing of speech transmission. L. to r: M. V. Mathews, E. E. David, Jr., Dr. H. S. MacDonald. Story on p. 64.

Published every week on Saturday by TELEPHONY PUBLISHING CORP., 540 S. Dearborn St., Chicago 5, Ill. Subscription $6.00 per year. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879.

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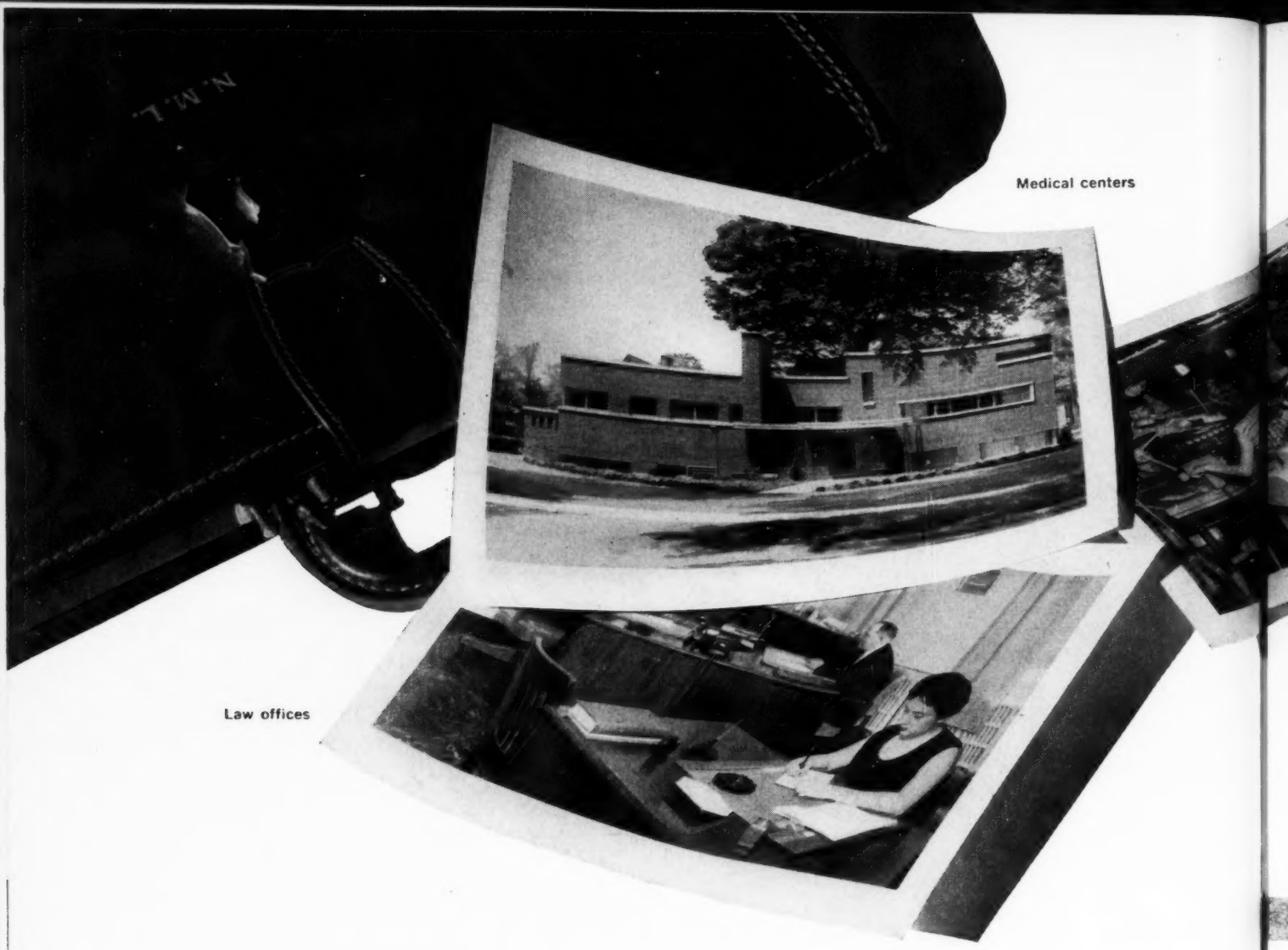
MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING



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YOU can give your commercial revenue a substantial boost by selling your medium-sized commercial subscribers a 2-10 or 4-20 Dial PBX System.

You'll find your best market for these unattended systems among your "in-between"customers—*those who are outgrowing their present equipment, but do not need a large system.*

You can provide these subscribers with "unrestricted" stations by supplying the new Stromberg-Carlson "1573-A" 2-line instruments with the 2-10 and 4-20 cabinets. Or you can provide fast, efficient dial PX service by furnishing our standard "1543" telephones.

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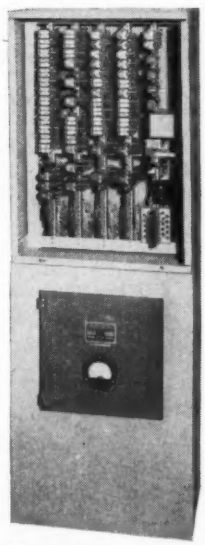
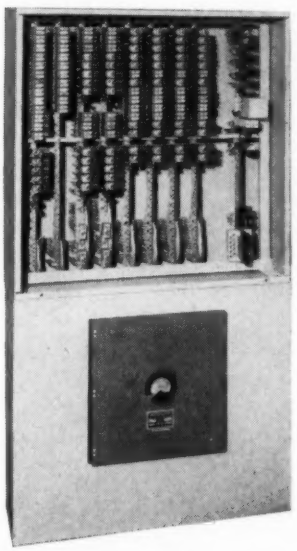


2-10 SYSTEM provides selective talking, automatic ringing, instantaneous ringing trip, and dial, ringing and busy tones. Equipment cabinet, including battery eliminator, is 53½" high, 18¼" wide, 10⅛" deep. Capacity is 2 simultaneous talking paths, 10 lines, up to 30 stations, including extensions.



4-20 SYSTEM offers the same basic features as the 2-10. Equipment cabinet, including battery eliminator, is 59" high, 32" wide, 10⅛" deep. Capacity is 4 simultaneous talking paths, 20 lines, up to 60 stations, including extensions.

"RESTRICTED" STATIONS (non-trunk-connected) use the popular Stromberg-Carlson "1543" instruments to provide fast, efficient dial PX service. (Choice of eight modern colors.)

"UNRESTRICTED" STATIONS are equipped with new Stromberg-Carlson "1573-A" 2-line telephones (available in gray or ebony), giving access both to trunk lines and Internal dial system. Hold button for each trunk.

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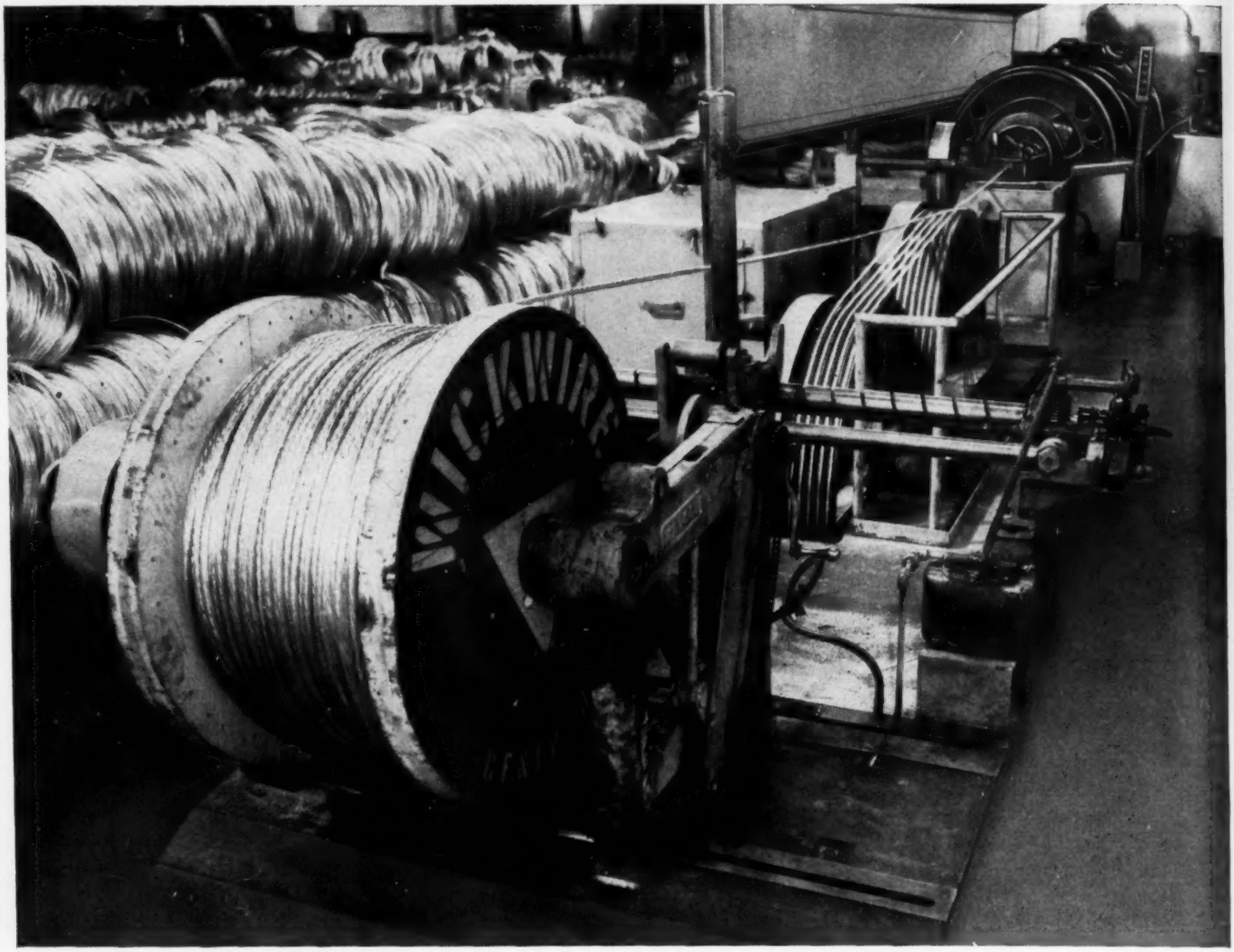

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FLASHES AND PLUGS

PENALTY FOR OVERTIME. Telephone conversations can lead to all sorts of consequences, a Jersey City, N. J. housewife can attest. On Nov. 4 while talking on the telephone, she forgot about food she had cooking on the gas stove in the kitchen.

The water boiled over, extinguishing the gas flame, resulting in her being overcome by the gas. She received treatment by a medical center ambulance nurse.

•

SPUTNIK SPUTTERINGS. A man calling himself "a crazy Irishman" reportedly is telephoning every other day to the Pentagon and Naval Research Laboratory, headquarters of the U. S. satellite project Vanguard, to offer his services as a space explorer.

A Vanguard spokesman reports: "He says he wants to get up in a satellite so he can shoot down the Russian sputnik.

"I keep telling him the satellite is only 20 inches wide and he keeps insisting he is very small and he'll go on a diet."

The Irishman is the most persistent among a growing number of purposeful patriots offering themselves for the space experiment.

Whereas the Irishman offered to trim down for the trip, a 13-year-old Georgia boy wrote the Pentagon he'll volunteer to board a satellite provided it is made larger.

"I'm very serious about going up and making studies of the heavens and earth. I will expect to hear from you soon."

A South Carolina airman directed his letter to Secretary of Defense Neil H. McElroy, saying, "I'd like to be the first man to embark on so great an adventure in outer space."

An airman from Mississippi wrote "Dear McElroy" offering to serve as a spaceman.

"Hoping you, secretary, take this at heart what I have to say," he wrote. "I have not done enough for our country and want to do more."

Space travel isn't the only concern of those contacting the Naval Research Laboratory. Two boys and a girl from Illinois apparently are interested in a little outer space real estate speculation.

They sent the laboratory a check for $3.00 and a request for the deeds on three acres on the moon.

•

TELEPHONE TO THE RESCUE. The day after his car was stolen from a parking lot, a Sandusky, O. lad had to leave for induction into the Army.

From a bus bound for an induction center at Cleveland, he spotted his car abandoned along a highway. He telephoned his grandmother from Cleveland and police recovered the car.

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

November 23, 1957

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Toll grade. These insulators are employed for all exchange circuits and for all toll and trunk circuits that do not exceed ten miles.

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Dependability is the story of Hemingray insulators. On the line, you can depend on their strength and uniform high quality . . . when you order, you can depend on prompt delivery of what you need, when you need it.

Since 1870, Hemingray insulators have been the standard for quality on telephone and telegraph lines the world over. Dependable Hemingray Glass insulators today carry most of the world's overhead telephone and telegraph lines . . . play a major part in helping to maintain our highly dependable communications systems. These insulators are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

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GENERAL OFFICES · TOLEDO 1, OHIO

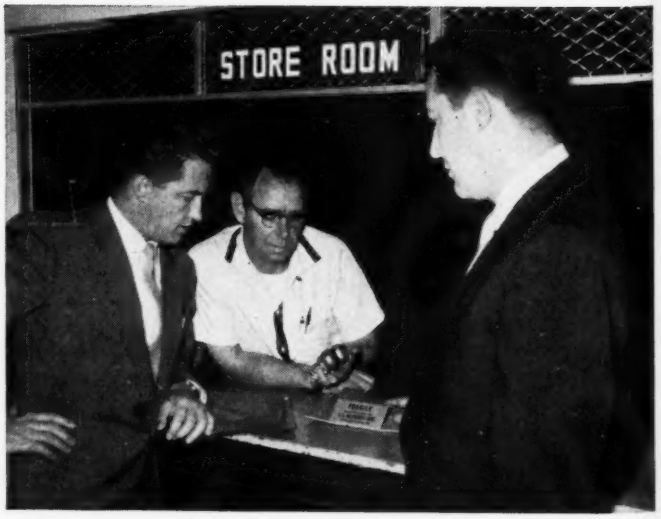
A Lorain Telephone construction crew checks over the day's assignment. Not only new construction and maintenance, but work designed to improve existing service is kept on schedule because the Lorain Telephone Company constantly plans ahead.

How Lorain Telephone grows through forecasts of community expansion

Early planning and accurate timing have enabled this progressive independent telephone company to anticipate growth in the Lorain, Ohio, area.

In January, 1940, the Lorain Telephone Company of Lorain, Ohio, had 9,229 subscribers. Today the company has over 37,000. This substantial and steady growth has been well deserved, for it has been based on a sound plan. Lorain Telephone Company executives project the coming needs of their territory and base their plans for inside and outside plant expansion on intimate knowledge of residential, commercial and industrial growth.

Lorain Telephone men watch the plans of industry to locate large and small plants in their territory. Long experience in the community helps these telephone experts to chart the growth of residential developments and service businesses which inevitably follow the opening of new plants. By the time the need arises for additional telephone service, the required equipment is already on order and construction work scheduled.



Caught by the camera at the storeroom of the Outside Plant Department are M. A. (Bud) Fout, (center) Superintendent of Material and Supplies for Lorain, George Ostrander, (left) Graybar Telephone Specialist; and R. H. Vollmer, (right) Graybar Sales Representative. These frequent huddles help keep Lorain inventory in balance.

President Herman E. Hageman, pictured here with his son, James C. Hageman, Vice President, earned his B.S. degree at Ohio Wesleyan in 1903. President Hageman has been in telephone work continuously since his graduation. He has found time, in addition, for distinguished work with the Defense Communications Board and to serve the Ohio Independent Telephone Association as president for 3 years. Recently Mr. James Hageman received for the Company one of the annual Community Service Award Plaques presented by the O.I.T.A.

"We like to do business with Graybar because we get what we need and we get it on time. We know that Graybar, like ourselves, anticipates the needs of customers . . ."

Says James C. Hageman, Vice President of Lorain Telephone Company

Typical of the special installations Lorain makes for its customers is the USI Type 30-B PABX supplied by Graybar and installed at the Lorain Banking Company's main office. Shown here are Adele Zlotnicki at the attendant's cabinet; Gerald West, Lorain Telephone Company Service Engineer (right); and Robert Vollmer, Graybar Sales Representative (center).

Fred Gerber, superintendent of outside plant for Lorain, adds that delivery promises made by Graybar can be depended upon. Also, Mr. Gerber looks to George Ostrander, Graybar Telephone Specialist, for up-to-the-minute product information.

"The construction schedules of our company have been, and are being met," says Mr. Gerber, "in large measure by the fine cooperation we receive from outstanding suppliers, like Graybar."

We at Graybar are proud of our long association with Lorain Telephone Company, one of the many fast growing firms in the vital field of independent telephony. Graybar, too, is an independent company . . . wholly owned and managed by its operating and retired personnel. You get *personal* service from people who have a *personal* interest in giving you the assistance you need . . . when you need it.

Through more than 130 Graybar offices and warehouses, we are serving the independent telephone companies of this country with pole line supplies, central office equipment, subscriber carrier and toll circuit carrier, linemen's tools and safety equipment, poles, conduit and booths — besides providing fast, convenient service on over 100,000 electrical items. For anything and everything electrical, call Graybar *first*.

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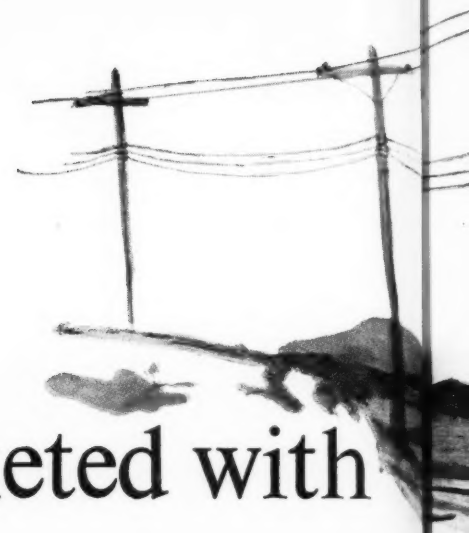
Everything Electrical
+Graybar ELECTRIC COMPANY

IN OVER 130 PRINCIPAL CITIES

Excellent weatherability . . .



Telephone cable jacketed with a Du Pont ALATHON® POLYETHYLENE RESIN has outstanding resistance to moisture and sun

Telephone cable jacketed with Du Pont ALATHON 4 (black) gets maximum protection . . . has outstanding resistance to moisture, heat, abrasion and weathering. Lightweight and smooth, jacketing of ALATHON 4 provides cable that is easy to handle . . . strings over long spans, thus requiring fewer splicings. And jacketing of ALATHON is clean stripping . . . maintains its strength and flexibility at sub-zero temperatures.

Telephone communications systems utilizing primary insulation of Du Pont ALATHON 3C have long "reach". . . minimum fadeout and crosstalk due to the extremely low specific inductive capacity of ALATHON. It is available in eleven colors.

Du Pont has established a family of ALATHON polyethylene resins, each suited to a range of insulating and jacketing applications. Consult with your supplier. He will be happy to explain the advantages of a wire and cable construction utilizing an ALATHON tailored to meet your specific requirements; or write to E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Room 5111, Wilmington 98, Delaware.

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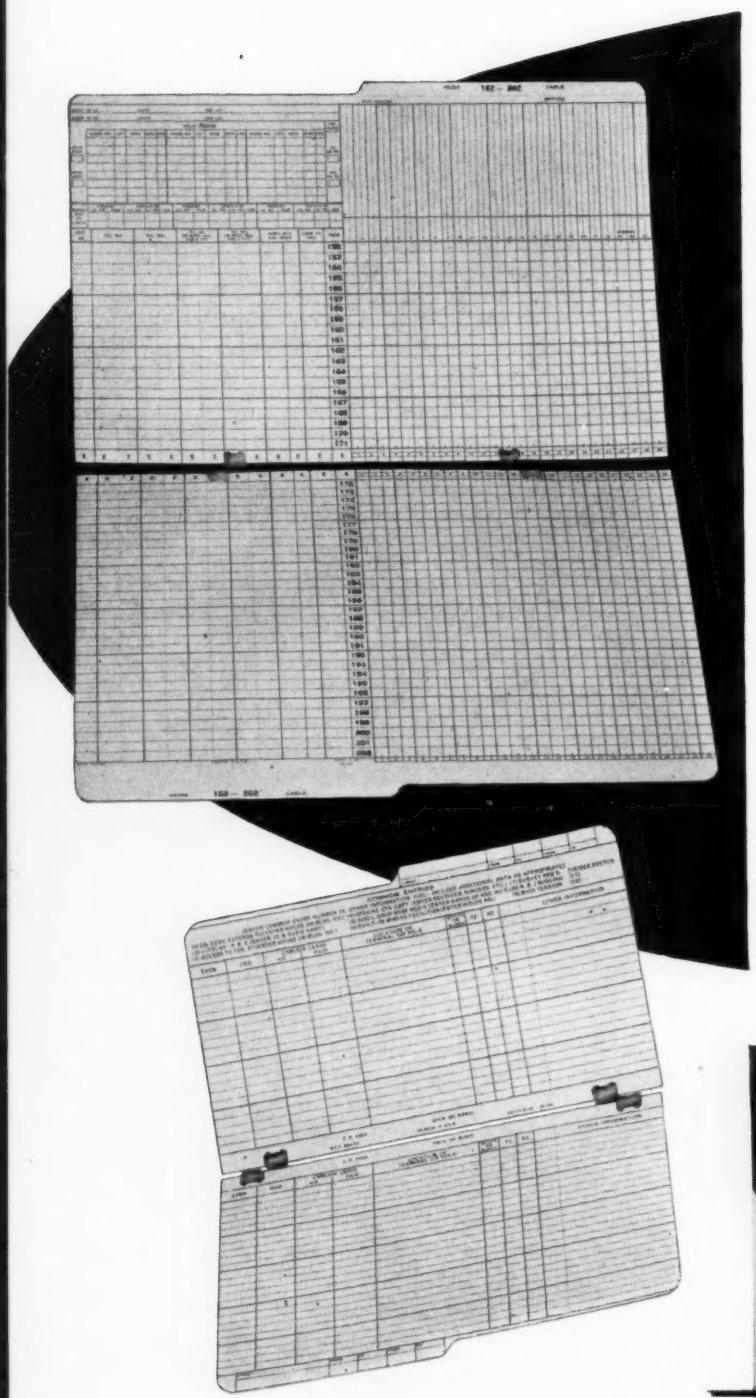
. . . THROUGH CHEMISTRY

ACME VISIBLE

CABLE AND TERMINAL A



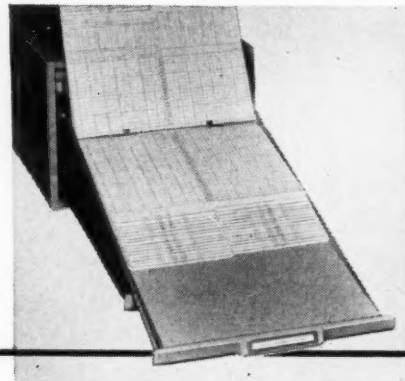
Designed by experienced telephone personnel to accommodate all of the various conditions encountered in the preparation of terminal assignment, exchange subscriber cable, and related basic plant records, in accordance with approved system practices. Simplifies and speeds the work of assignment. Adaptable for large, intermediate and small centers with the flexibility to meet the requirements for peak and normal work loads, varying number of cables, and other local conditions.

CABLE ASSIGNMENTS

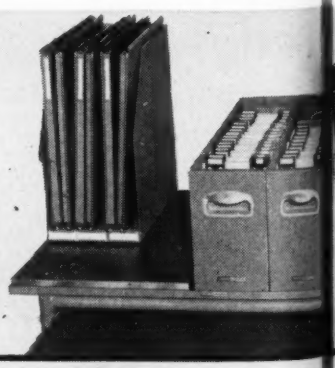
Cable assignments forms. With preprinted pair numbers, filed in numerical sequence, exposing a 51 pair complement. Cards are of special Acme Endurex rag content stock to permit repeated erasures and changes. Forms available for 50 terminal capacity and 8 party stations; 44 terminal capacity and 10 party stations; and for unusual conditions.

TERMINAL ASSIGNMENTS

Terminal assignment forms. Eliminate the necessity of referring to supplementary maps to determine the correct distribution cable terminal. Forms available for distribution by (1) street, block or alley; (2) office building or apartment; (3) exchange wire.



Visible cabinets are available in a number of sizes. Each tray has a maximum of 102 forms or the equivalent of 5,100 cable pairs. Cabinets can either be stationary on stands or desks, or mounted on turntables.



Portable stand with sliding shelf, ca assignment book rack holding thr books and three vertical trays for su scriber line cards. Developed f smaller telephone offices where o individual handles both cable assig ment and subscriber line cards.

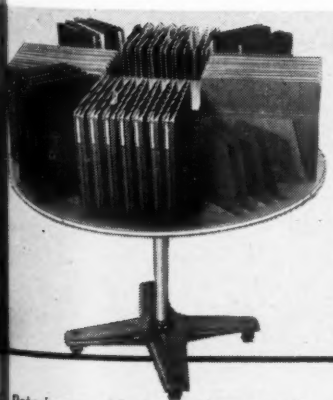
LASSIGNMENTS

A TOUCH OF A BUTTON BRINGS THE RECORD TO YOU

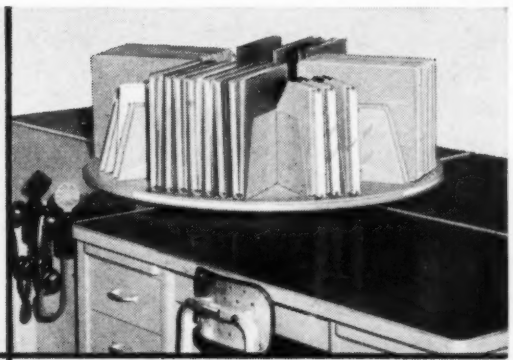
Individuals seated at rotary need not move about to reach records. Books slide in and out without any lifting. Rotaries provide accessability to records at many points around circumference, and permit clerk to do a complete cable throw.

They are designed to house a multiple number of light-weight metal-edged visible books containing many thousands of records.

Motorized Rotary and 6-position Desk Assembly with push-button controls at each position. One of many sizes available for Plant Department Records; Reservation Bureaus; Inventory Records; Records of Shipments; other central-control references and posting requirements.



Rotaries provide tremendous capacity in a compact area and permit instant availability of records to one or more persons. Rotary on pedestal, hand operated and desk height, may be placed next to or between desks, wherever convenient.



This illustration shows rotary placed at the junction of four desks . . . easily available to four persons. Visible card books are filed between spaced divider fins with intermediate divider openings for filing other papers, etc.

Acme Visible equipment has been designed for telephone use by Acme Systems Engineers in close cooperation with practical experienced telephone experts. Tell us your requirements and receive our suggestions and quotations.

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Telephone System Division, Crozet, Virginia

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- ☐ #975 on Acme Flexoline
- ☐ Have representative call. Date.....Time.....
- ☐ We are interested in Acme Visible equipment for .....records
  kind of records

Company.....Attention.....

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mid-west telephone company

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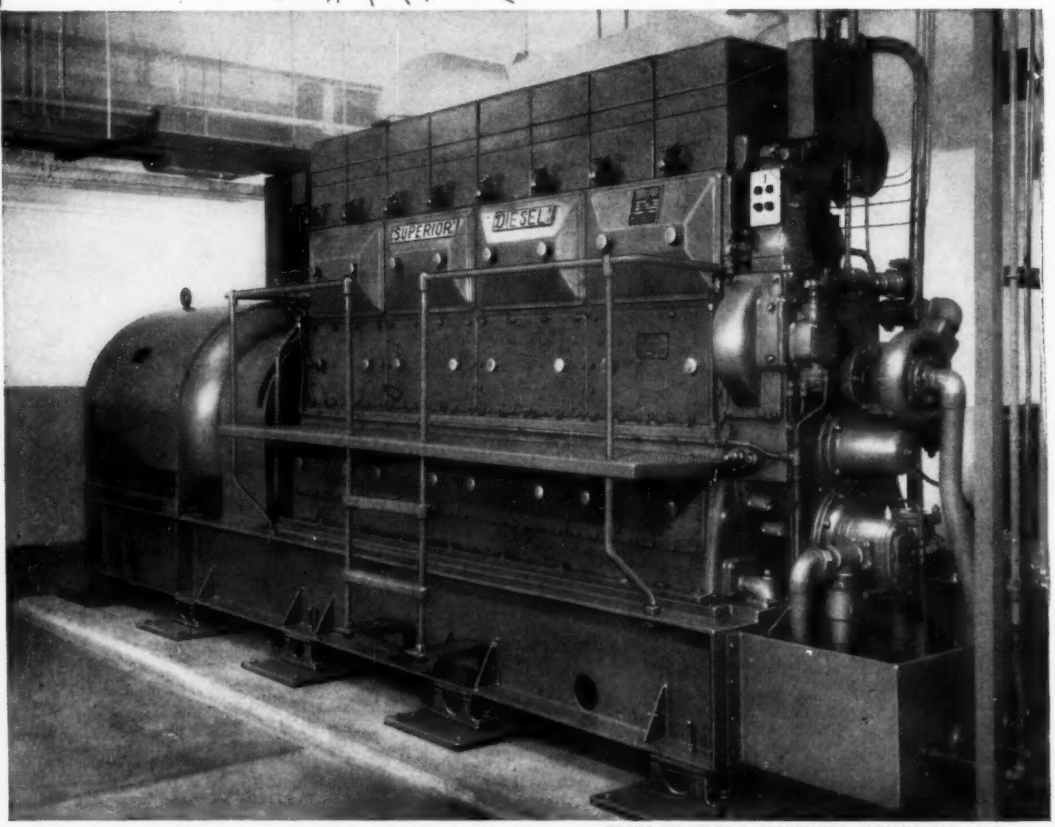

PHOTO BY MILES & ASSOCIATES, INDIANAPOLIS, IND.

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Anytime, anywhere you call on White Superior Diesels for generator power, they answer—instantly, powerfully, dependably. A mid-west telephone company wanted standby service they could absolutely trust. So to power three heavy-duty electric generators, they wisely chose Model 40 Superior Diesels, just as hundreds have done on generator applications throughout the world.

Singly or in multiples, these compact, completely self-contained Superior power packages economically supply prime power, supplementary or standby power. Superiors consistently produce high output for size, and they can operate continuously on non-premium fuels.

Superior's dependability begins with an engine of extreme design simplicity. Fewer cylinders and internal parts furnish power equal to other engines with more cylinders. Such simplicity contributes to fewer replacements, lower maintenance and most important, longer life.

Standard or custom-built sets meet all NEMA and AIEE specifications, and are available in the power range from 150 to 1500 KW. *Write today for complete information.*

White Diesel

WHITE DIESEL ENGINE DIVISION
THE WHITE MOTOR COMPANY

Plant and General Offices: Springfield, Ohio

Others for Excise Tax Repeal

TELEPHONE companies will be pleased to know they are not alone in the fight for the repeal of federal excise taxes on telephone service. Other groups are recognizing that these taxes discriminate against telephone users and that they are unjust and unrealistic because this absolutely essential service in the social and business life of the nation is classified, for taxing purposes, with pure luxuries such as furs, alcoholic beverages, tobacco, cosmetics, jewelry, etc.

The Chamber of Commerce of the United States, through its Transportation and Communication Department, has announced that it is working for the repeal of the excise taxes on communication and transportation services.

The department recently took a poll of more than 1,000 business organizations in the communications and transportation fields, and the repeal of the excise taxes had priority over other issues deserving the attention of the chamber. The questionnaire gave the recipients a choice of 11 issues, selected as being the most important and carrying the greatest significance for their segment of the economy.

The U. S. chamber's Transportation and Communication Department is presently engaged in an active campaign to inform local and state chambers of commerce as to the inequity of the communications and transportation excise taxes, so the local units can aid in the movement to bring about their repeal. Meetings have been held for this purpose and others are scheduled; also written material has been sent to the local chambers.

Telephone company management personnel can and should help the U. S. chamber in this important undertaking by urging their local and state chambers of commerce to take a position in favor of repeal of the excise levies.

Another prominent group that has voiced its opposition to these excise taxes is the National Association of Railroad & Utility Commissioners. At the association's recent annual convention, the state commissioners adopted a resolution calling for the repeal of the taxes, and providing for a special committee to be appointed to implement and carry out the objectives of the NARUC in respect to the excise tax repeal. (See the text of the NARUC resolution on page 19.)

And, again, we repeat the recommendation we made in the Nov. 9 issue, and emphasized by Mr. Welch in the Nov. 16 issue—that all telephone company personnel, everywhere, request their congressmen to vote in favor of the repeal of the telephone excises and also urge telephone subscribers to do the same.

A brief summary of some of the sound arguments for the repeal of the excise taxes has been prepared by the Tax Committee of the United States Independent Telephone Association for the use of Independent telephone people. It reads as follows:

(1) Telephone communications is essential to commerce, industry, and the social life of the nation. It is not a luxury item. Nevertheless, it is subject to an excise tax which normally applies to such luxuries as furs, cosmetics, alcoholic beverages, et cetera.

(2) The Gallup Poll has found that the tax on telephone communications is the most unpopular of all the excise taxes because it adds to the cost of a genuine necessity in the American way of living.

(3) State regulatory authorities condemn the levies as "inimicable to the maintenance of reasonably priced and non-discriminatory communications service," because it adds unreasonably to the rates and charges which they have carefully established.

(Please turn to page 53)

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Telephone industry to be concerned with any changes in nation's defense warning system brought about by "international missile derby." Jimmy Roosevelt says he will protect small businessmen against "vested interests" in FCC hearings. Transit industry fights FCC rule on two-way radio.

PRESIDENT Eisenhower laid it on the line in his speech at Oklahoma City on Nov. 13, about what this country has to do to stay in the international missile derby. The impact of this hard choice of more spending for armament, research, and allied developments for the national security, is bound to be felt in a number of other areas of our economy. Some of them might be quite surprising.

For business people in general the specter of possibly higher taxes and the threat of economic controls (on a standby basis or otherwise) is not a pleasant thing to think about in this Thanksgiving season. But, there are special areas of government spending and government lending which may be in for what Secretary of State Dulles might call "agonizing reappraisal."

First, is increased spending for the Armed Services and related defense activity necessary? The President clearly recognized the need for maintaining conventional weapons, such as the modernized Army, Navy, and Air Force. He plainly suggested that improvements and additional commitments might have to be made for the Strategic Air Command (SAC), as the *offensive* power of modern combat moves into the missile age or push-button era.

Improvements and more commitments will also have to be made in our corresponding *defensive* system—meaning anti-missile or counter push-buttons. For the telephone industry, there is an overtone, here, of possible changes—all in the direction of greater activity—in the elaborate warning system now being completed along our northern continental latitudes, and in which the telephone industry (both Bell and Independent) plays a considerable part. In other words, the President did not pose a neat solution of substituting new weapons for old weapons. For some time, we will have to have both—missiles and bombers. And, of course, that means piling on the bill which the taxpayer must take care of.

Guns Plus Guns Equals Less Butter

How will this be done while keeping the budget anywhere nearly in balance? There are only two alternatives or a combination of both—more taxes or cutting non-defense activities. As to the last alternative—a reduction of non-defense spending—all Washington is wondering where the cuts will be made. President Eisenhower was not very helpful in his Oklahoma speech, although he may be more specific hereafter.

For the present, the President seems to suggest that it will be up to Congress to decide where the cuts will be made, in other areas of federal spending. The President said on this point: "While some savings may still be squeezed out through the wringer method, savings of the kind we need can come about only through cutting out or *deferring entire categories of activity.* This will be one of the hardest and most distasteful tasks that the coming session of Congress must face." (Italics supplied.)

The Chief Executive did reject the idea of slashing funds for foreign aid on the theory that that would lessen, rather than increase, our security. Congress may differ on that, and probably will to some extent. But, it seems to be the President's thinking that we must continue to strengthen our allies, both in military and economic aid.

If that is so, then any serious cutting to be done would have to be done right here in our own country. And, that is the very suggestion that is going to tear open a hornet's nest as soon as the President throws it into the next Congress. The chairmen of several congressional committees have already jumped the gun by giving formal or informal notice that any cutting will have to be done outside of their bailiwicks.

Senator Chavez (Dem., N. M.), chairman of the Senate Public Works Committee, rose up the day after the Oklahoma speech and said that he hoped the President did not have in mind to cut federal expenditures for —of all things—public works. Of course, a good many disinterested taxpayers might reach the conclusion that that might be just what the President did have in mind.

What are public works in which the federal government is engaged? Mostly they are dams, bridges, highways, and few (if any) of them on a self-supporting basis. So, there is the possibility that the administration's cheese parers will wonder just why it is necessary to be building public works, at this particular time, when we need the money for missiles and Sputniks, etc.

The same idea might be applied to irrigation and reclamation projects being done under the auspices of the Interior Department. For some years now the federal government has been spending billions in irrigation and reclamation dams, and similar work, to bring arid lands into productivity—so that the farmers will have more acres to grow more crops. At the same time, the Agriculture Department has been spending millions in buying surplus agricultural products because we already have too much acreage in pro-

duction. And, so, while the Interior Department pays out the taxpayers' money to bring arid land into production, the Agriculture Department is paying out the taxpayers' money to persuade farmers to take land out of production.

Some people have insisted that this does not make very good sense. And it may be, under the stress of figuring out ways and means to keep Uncle Sam in the missile race, the budgeteers will agree with that notion. In other words, the forthcoming budget might at least defer some of these reclamation expenditures to less urgent times. Again, Congress may not agree.

Reclamation projects have always been very popular politically. Some congressmen have held their seats for years on their ability to point with pride to some magnificent structure in their district, which was erected by the taxpayers but presumably for the public interest and the benefit of the area.

All This and REA Too?

Even such a politically popular program as the Rural Electrification Administration may come in for some hard looks when the next budget is buttoned down. As a matter of fact, the original purpose of the Rural Electrification Act has been 97 per cent accomplished. REA was created to bring power to the nation's farmers. So, now they have it. Of course, REA meanwhile has found some other work to do, not only in the rural electrification field but—as the readers of this department well know—in the rural telephone field.

With the rural electrification job so near completion, is it necessary that appropriations for new lending authority on the constantly increasing scale of the last few years continue during this defense emergency? Again, it is for Congress to decide. And, if a decided cut is suggested in REA activity, the political screaming you will hear in Washington next January will rival the true mother's reaction to King Solomon's judgment that her child be cut in half.

There are other areas of so-called "social spending" that will fall under the shadow of possible retrenchment —schools and highways. Former President Truman contributed a comment that the most important thing for the government to do at this critical time is to make further progress on civil rights reforms. There are bound to be differences of opinion on *that!* Should we start washing the windows when the house is burning down? But, then, Harry always did have a great sense of timing.

It all goes to show that the next session of Congress is shaping up as a pretty hectic assembly, especially with the divided responsibility of a President and a congressional majority of opposite political faiths. And, what will happen if Congress refuses to cut? Suppose all the protectors of special bailiwicks of government spending or lending are successful in averting the knifing of their favorite child, the only alternative is more deficits or more taxes, or both. It is a time of decision in which all citizens will do well to expect their representatives in Congress to take the over-all rather than provincial view of what needs to be done.

Resolution Adopted by National Association of Railroad & Utility Commissioners Urging Repeal of Federal Excise Taxes

WHEREAS, The federal excise taxes on communication services were greatly increased during World War II to help defray war costs and to discourage unnecessary use of facilities employed in rendering such services; and

WHEREAS, Today, 12 years after the cessation of hostilities, there continues to be exacted a 10 per cent levy on local exchange and toll telephone and on telegraph communication services; and

WHEREAS, Congress has recognized the special burden created by these excise taxes through the more recent reductions in some of such taxes; and

WHEREAS, Communications services cannot be considered in the class of a luxury, but rather as public utilities are necessities of present-day life; and

WHEREAS, These excise taxes are considered by the customers as an integral part of the cost of communication services; and

WHEREAS, During the year 1956 such communication excise levies exceeded a total of 574 million dollars or in excess of $9.00 per telephone per year; and

WHEREAS, Such excise taxes are discriminatory against the long distance user of the services and against those sections of the country more removed from centers of population, for the reason that the tax is calculated as a percentage of the service charge; now, therefore, be it

RESOLVED, By the National Association of Railroad & Utilities Commissioners, that the existing federal excise taxes on communication services are discriminatory and contrary to the best interests of the public and should, accordingly, be repealed; and

RESOLVED FURTHER, That the president of this association appoint a special committee to implement and carry out the objectives of the association in respect to the repeal of the federal excise taxes on both communication and transportation services.

Jimmy Roosevelt Rides Again

Rep. James Roosevelt (Dem., Cal.) has served notice that he is not finished with his criticism of the Federal Communications Commission and its regulation of telephone and radio broadcasting. It will be recalled that Roosevelt was most critical of the consent decree filed in the federal district court by which the Justice Department ended its anti-trust suit against the Bell System control of Western Electric.

Now the California representative is hinting that "vested interests" may gain control of FM radio frequencies now reserved for the public. But, in the same speech, Roosevelt told the Southeast Portland (Ore.) Chamber of Commerce, in effect, that small businessmen would have a stout protector against these "vested interests." Guess who? Roosevelt promised that his House Select Committee to Study the Problems of Small Business would set itself up as a "watchdog" over the Federal Communications Commission to protect the rights of small businessmen dependent on FM broadcasting.

That makes about four "watchdogs" which have set themselves up to watch out for the FCC. In addition to Roosevelt's group there are such highly articulate watchdogs as the House Judiciary Committee, headed by Representative Celler (Dem., N. Y.), and the new House Sub-committee on Legislative Oversight, which has picked on the FCC as the first of a group of regulatory commissions to get a careful going over to see that they are obeying the "intent of Congress."

There also is the House Interstate and Foreign Commerce Committee, which might be called the regular "watchdog" committee for all the regulatory commissions. And, of course, there is a complete additional set of "watchdog" committees over on the Senate side.

All of these groups are highly sensitive to any slight fluttering of curtains in windows of the FCC. Some of them have been known to growl, if not bark, quite volubly on such occasions. In fact, it would be more truthful than witty to say that the FCC is the "dog-gonest" federal regulatory commission doing business in Washington today.

But, getting back to Jimmy Roosevelt and his speech of assurance to the small businessmen of Portland, Ore., reference was made to the fact that the FCC had ordered a re-examination of wave lengths used by amateurs, television stations, and radio stations on both the FM and AM segments of the spectrum. What seems to bother Jimmy is the type of people who are turning up at these hearings. He does not like their looks. They look like "vested interests" to him. And, that is bad in Jimmy's book.

Roosevelt said: "I'm perturbed about this frequency modulation situation because of the groups that have asked to be heard" before the FCC. He identified them as "groups the FM broadcasters know have already expressed desires to get all or a part of the 20-megacycle wave spread now assigned to FM."

Among those who have filed notice of interest are the American Telephone & Telegraph Co. and the American Petroleum Institute. Remember, nobody has said a word yet. They have just turned up in the courtroom, so to speak, in the spectator's section before the show has started. But, fear not, little businessmen, Jimmy is on the job.

He concluded: "If vested interests are seeking to encroach on the wave lengths being used to supply music and news, good programming, and over-all high-quality broadcasting to half a city's population then it becomes a problem, too, for a congressman such as myself." As Happy Hooligan used to say in the good old days when comic strips were comic, "Don't worry, I'll save youse."

Transit Enters Radio Fight

The American Transit Association, which represents all the larger streetcar and urban bus operators in the United States, has announced its intention to oppose a rule-making proposal on radio frequency allocation, tentatively reported by the FCC. The street-

REA Approves Loans Totaling $1,340,000

Two of the four rural telephone loans made the week of Nov. 3 by the Rural Electrification Administration were to new borrowers. The loans, totaling $1,340,000, were made to borrowers in Alabama, Iowa, Ohio and Oregon. This money will be used to provide new and improved telephone service to 2,526 rural subscribers, of whom 1,900 are now without telephones.

Central Iowa Rural Telephone Co., Cedar Rapids, Iowa; $538,000, first loan (Nov. 4).

The new borrower is now furnishing magneto service to 1,128 rural subscribers. Exchanges are located at Alta Vista, Conroy, Ledyard, Persia and Protivin.

The company proposes to construct new automatic central offices to replace magneto facilities at the present exchanges.

The rehabilitation and new construction will make possible improved service for the existing subscribers and initial service for 282 farm families in the operating area.

Southerland Dows is president of the Central Iowa Rural Telephone Co.

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The Paulding (O.) Telephone Co.; $426,000, first loan (Nov. 4).

The new borrower is now providing automatic service to 1,248 subscribers. It proposes to furnish new and improved service to the community of Cecil through acquisition of the Cecil Mutual Telephone Association, which now provides magneto service to 150 rural subscribers.

A new automatic central office is scheduled at Cecil. The rehabilitation and new construction will enable the borrower to bring initial service to 403 rural subscribers in the two exchanges.

Funds are also included in this loan to refinance a portion of the borrower's existing indebtedness.

Joseph B. Quatman is president and James C. Horton is manager of the Paulding Telephone Co.

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New Hope (Ala.) Telephone Cooperative; $285,000, fourth loan (Nov. 6).

The borrower plans to use these funds to provide initial telephone service to 1,107 rural families in its area.

With the four REA loans, totaling $576,000, the New Hope cooperative will be able to offer new and improved service to 1,763 rural subscribers. The system's three exchanges at Grant, New Hope and Owens Crossroads are in operation and serve approximately 800 subscribers. Complete, the system will provide service without toll charge among the three exchange areas.

Robert Moon is president of the cooperative and Charles V. Lee is manager.

•

Stayton (Ore.) Cooperative Telephone Co.; $91,000, second loan to this borrower (Nov. 7).

The cooperative proposes to use these funds to provide facilities to serve 108 subscribers in the area not included in the prior loan. Loan funds will also be used to provide for an increase in the proportion of private and semi-private lines on the system.

The two REA loans, totaling $510,000, will make possible new and improved service to 1,467 rural subscribers.

George Tate is president and Mike Benedict is manager of the Stayton Cooperative Telephone Co.

car and bus operators operate quite a bit of two-way radio equipment in this field.

The FCC plan calls for a shift of frequencies to a higher megacycle band for a majority of transit radio systems within five years. It would also preclude the use of any 25 to 50-megacycle frequencies for transit applicants. In other words, about 50 streetcar and bus companies now using two-way radio equipment would have to buy some new equipment and operate on a different frequency.

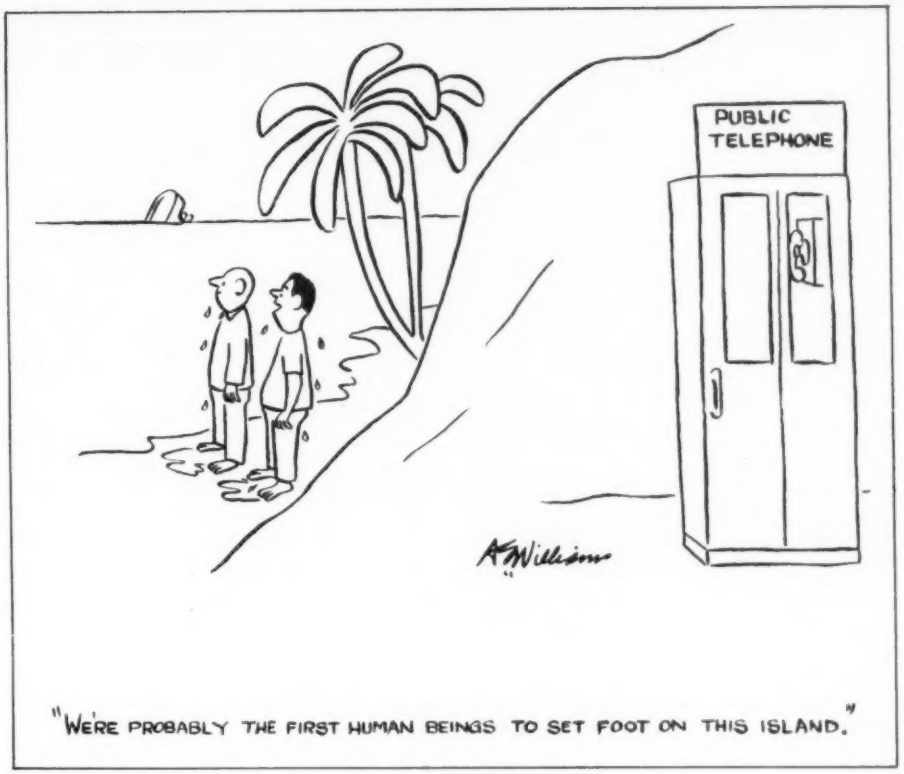
The transit association's opposition was slated to be filed within the deadline (originally set for Nov. 15). The important provisions of the FCC's proposals affecting the two frequency areas in which transit radios operate are as follows:

Certain channels, including those in the 44-megacycle band would be "split." Now assigned on a 40-kilocycle separation basis, it is proposed to assign them in the future on a 20-kilocycle separation basis, thus making available additional channels in between the old ones. (Channels in the 30-31-megacycle area are not to be split at this time, although the commission in a concurrent order put into effect on a mandatory basis certain narrow band or 20-kilocycle technical standards for all frequencies in the range 25-50 megacycles. Equipment authorized prior to Nov. 1, 1958, will have to conform to the new standards by not later than Oct. 31, 1963.)

The four frequencies in the 44-megacycle band presently available to transit (44.46, 44.50, 44.54, and 44.58 megacycles) are proposed to be transferred (together with the intervening "splits") to Interurban Property carriers.

By way of compensating urban carriers of passengers for this loss, the commission proposes to make available for their use three frequencies in the 150-megacycle band on a 30-kilocycle separation basis—150.905, 150.935, and 150.965 megacycles. (FCC comment: "On the basis of present usage of available frequencies, it is believed that the three-for-four proposal is fair and equitable.") Stations on the "lost" 44-megacycle frequencies would be permitted to continue operation for a period not to exceed five years.

The commission proposes to require by appropriate rule amendments that all new systems, authorized after July 1, 1960, to use frequencies in the 25-50-megacycle range, utilize so-called "tone-actuated squelch systems" designed to reduce substantially the nuisance type of interference now being experienced. No mention is made in the present proposal of any deadline for compliance by systems authorized before July 1, 1960.



"WE'RE PROBABLY THE FIRST HUMAN BEINGS TO SET FOOT ON THIS ISLAND."

The commission proposes to amend its rules to allow an applicant to utilize a 25-50-megacycle frequency (where a frequency in the 150-megacycle band is available in the same service) only after he has demonstrated that certain conditions exist. Briefly, with such an amendment, applicants having only "small-area communications requirements" generally would be channeled into higher frequency bands.

An operating area "in excess of 13,000 square miles," or "exceeding 150 miles in its greater dimension," would apparently be the criterion as to whether it was small or large. Under such a definition, a transit operation would be classified as having "small-area communications requirements" and hence, "channeled" into the higher frequency bands.

The commission proposes not to accept, in the future, any frequency assignment plan which "does not provide for assignment in all areas of substantially all frequencies available to the service."

Mobile Radio Pow-wow

A frank discussion of present and future radio frequency requirements by telephone industry experts and others in the vehicular radio field will highlight an important public meeting on mobile radio-telephone. This will be sponsored by the Institute of Radio Engineers' Professional Group on Vehicular Communications, which meets in Washington, D. C., on Dec. 4 and 5. The session was planned by Washington representatives of the major instrumentalities in the vehicular communications field.

The purpose is to give the country's mobile radio-telephone users and suppliers a comprehensive and up-to-the-minute look at the present and future prospects for mobile radio-telephone service. A two-hour panel discussion on Dec. 5 will be moderated by E. M. Webster, a former member of the FCC and a national expert on radio allocation. Each spokesman is to relate his views on vehicular radio frequency requirements and then be available for questioning by the other panel participants and by members of the audience.

The panel discussion will include views of top representatives of the FCC, radio equipment manufacturing industry, the engineering consultant area, the common carrier (telephone-telegraph) communications industry, and the mushrooming private radio operating field.

Taking part will be FCC Chief Engineer Edward W. Allen Jr.; Motorola Executive Vice President Daniel E. Noble; Washington engineering consultant, C. M. Jansky Jr.; American Telephone & Telegraph Co. Radio Engineer Francis M. Ryan; and Atlantic Refining Co. Communications Manager Mason S. Collett, who will speak for the nation's private radio users.

Data Transmission

By HAROLD B. McKAY, Electronics Editor

Part 1

THE GREEKS had a word for it and that word was "telegraph" which means far-off writing. The Greeks themselves used the Polybius telegraph in 300 BC. This system used combinations of lighted torches to convey letters of the alphabet to distant points.

Africans have long used drums to send messages echoing through the jungle and the American aborigine had his fires and smoke signals. All of these systems and many more that followed them had one purpose—data transmission.

Man's most common problem in communication is in making his thoughts known to others. His basic problem is to transfer the idea that is in his mind into the mind of other persons. Except for mystics who may be practiced in telepathy or extra-sensory perception, man finds it necessary to transform his thoughts into some medium in order to convey them to others.

Elementary as this may sound, most of man's problems probably stem from his failure to do just this.

If he is within speaking distance, he uses his voice to convey his thoughts to the listener. In doing this, he has transformed the mysterious processes of his brain into movements of his vocal cords. These, in turn, modulate an air stream and create what we call sound. Another conversion takes place when the listener's ear changes the sound waves into mechanical motion at his ear-drum, and another when the sensitive nerves somehow change these vibrations back into thought.

So, almost everyone, in order to transmit his thoughts to others, must change them into another form to do so. The African expresses his thoughts in tones of a drum, the American Indian expressed his in smoke and fire, the telephone user in an "undulating" current of electricity, the teletype user in the form of "marks" or "spaces" in an electrical code used by that instrument.

Computers

One of the hottest items on the American electronics scene today is an assortment of remarkable devices that bear the generic name of "computers." These range from glorified adding machines to mysterious monsters which can try out missiles and airplanes before they are even built. They range from relatively low-cost machines such as the Heath-kit build-it-yourself computer which sells for $945 to giant "brains" which cost millions of dollars.

Many of these machines have been built, and they are being used for hundreds of purposes. In few cases do they concern telephone companies directly, except for larger exchanges where computers might be used to handle bills, payrolls, or other internal functions. Indirectly these new machines have had quite an impact upon the telephone industry.

The main reason for this is that because of both the large size and high cost of some of these machines, it is going to be simpler and cheaper to set them up at centralized points and use telephone wires to run them.

There are probably many telephone companies which will never see a data circuit in their plant. On the other hand, there are probably also many companies which do not have the facilities to hook up a working data circuit if somebody ordered one. Some telephone companies may find themselves in an embarrassing situation in these cases.

Even if the SAGE defense program doesn't go through their territory, the remarkable growth of the computer business is such that the most unlikely customers may suddenly order data circuits into their home office, or some other place. It has actually been the experience of some military users that wires originally installed for voice communication are now actually overloaded with data transmissions. In other words the data transmission business is greater than the voice transmission

Data Transmission To Make Growing Use of Telephone Circuits

Data processing is a rapidly developing art, and new computing machines are being made at an increasing rate. Many of these systems contemplate transmission of data on telephone lines, but many of the telephone lines are not ready to receive the business which is being offered now.

Hundreds of circuits are already being used by business houses for data transmission. In addition the U. S. Army Signal Corps is building up a nation-wide computer network to handle their flow of supplies, and the SAGE defense system is already with us.

New devices, like Bell System's new data subset, are being invented rapidly and for this reason no article on this subject can be up to date. The material in these articles is based upon information available in the early part of 1957.

While any discussion of data transmission machines necessarily must be somewhat technical, we believe it is important that telephone company personnel be acquainted with the functions and uses of these machines, along with knowledge of data transmission techniques, as they depend on telephone circuits for operation. Such knowledge will be of great assistance in meeting this demand for this type of special telephone service.

business was when the line was installed.

The requirements for the various systems of data transmission will not be the same in all cases. A failure in a circuit to an IBM machine may draw a nasty letter from the local branch bank manager. A noise burst on a SAGE circuit might bring a bomb through the roof.

How They Work

Before going into the technical aspects of how data is sent over telephone lines, a little background on the computers themselves, and what they do, is in order. First of all, it might be well to point out that people who know computers best do not think of them as "brains." Neither do they claim that the machines can "think" or "understand" or "decide" anything.

In fact, it has been asserted that even top-flight machines like the Univac are merely high-class morons when it comes to thinking. The big advantage of the computer is that it is relatively free from error, and it usually does what it is told to do—and will continue to do so continuously—around the clock if necessary. In this field, the machine is somewhat more reliable than things like mere people who do make lots of mistakes, don't always do what they are told, and who can't work 24 hours a day.

On the other hand, humans sometimes think for themselves and even use initiative, like in Elbert Hubbard's "Message to Garcia." This is something computers don't do. Perhaps it is significant that the offices of International Business Machines, which makes lots of computers, have signs hanging around where people (not computers) can read them, bearing Thomas Watson's command, "THINK."

It is of interest at this point to note that Stromberg-Carlson is attempting to correct this deficiency on the part of computers by a means which will permit a human to introduce logic into a computer when it gets crossed up on a problem which cannot be solved without logic.

There are two basic types of computers, the "analog" and the "digital." The analog machines are specialized. They are built to solve certain types of problems only. That is, such a computer can solve a certain type of complex equation. It is of principle use where many highly involved problems of the same general type must be solved. One of the shortcomings of this type of machine is that it furnishes an approximate, rather than a precise answer.

Often compared to the slide rule, the analog computer may be accurate to two or three decimal places. These machines may be electro-mechanical as well as electronic in nature.

The digital computer is a straight calculating machine that is often compared to the adding machine or desk-type calculator. Unlike the analog, its answer is complete and perfect to a high number of decimal places.

In order for a computer to handle a problem, the problem must be expressed in a manner that the machine can handle (or understand, if you prefer.) Even within the computer itself, there is this need for a medium by which to express the thought. Thus, any adding machine could solve any problem which could be stated in terms of numbers to be added.

Programming

This is where the human operator of the machine comes in. Once a computer is set up to handle a problem, a reasonably well-trained ape could operate it. However, the machine must first be programmed. To program a machine means to set it up so that it will handle the type of problem you are going to give it.

On a simple problem, the programming would probably take longer than the solving of the problem, but once the program was set up, the machine could handle similar problems at a very rapid rate. Thus, businesses would have programs made up to handle separate office functions, such as the payroll, which would be used whenever needed.

It perhaps should be noted here that the expression of a problem of logic in a mathematical form is not new. A form of mathematics known as "Boolean" algebra has long been used in this manner. Also, as was explained in an article entitled "Binary Notation—the Language of Computers" (TELEPHONY, Jan. 12, 1957), a simple electrical circuit which has two states, and a binary mathematical system, can represent two facts as easily as two numbers.

In other words, whatever the question is, it can be answered by a computer if you can precisely describe it and register it mathematically. Sometimes, this can be done by assigning values to each of two possible answers, then the computing machine, by trial and error, will find out which answer is correct.

(If you are interested in pursuing this further, write to Edmund Berkeley & Associates, 815 Washington St., Newtonville, Mass. and ask for the catalog of publications. You can get plans for a small electric brain machine that can be built for less than $20.)

Punched Cards

Different machines have different requirements when it comes to feeding problems to them. The IBM line favors the punched card system, whereby the original data is recorded in the form of holes punched in a card. This idea is not particularly new, having been used on automatic looms over 200 years ago.

The idea of punched holes is to have a means of recording facts that a machine can read. In machines which use punched hole devices, mechanical or electrical fingers probe the card or template containing the holes, and act upon the intelligence contained therein, much as a blind person "reads" Braille.

However, just as a printed page must be converted to Braille for a blind person to understand it, so information must be converted into holes punched in a card for an IBM type machine to understand it.

It is interesting to note that other attempts are being made to make facts readable by computers. Stanford Research Institute was given a problem by the Bank of America to build a system for processing checks. In its final form it will read the check and deduct the amount from the right account.

One of the problems faced here is writing the pertinent information on the check in a manner that both the machine and humans can read. One approach is to stripe the checks with code marks of electrically conductive ink. Thus the cashier would read the written check, then stamp on the stripes for the machine to read.

In effect a key punch operator does this now. She reads the information, and records it on a card by means of punched holes.

Stanford Research developed a system using printed numbers of special configuration, which would be printed on the check in magnetic ink. Along the bottom of the check, the clearing house number, account number or other pertinent information would be printed in this special ink containing iron oxides.

When the check was written, and reached the bank, the first teller to get it would type on the amount drawn in the same kind of ink. From that point on the machine would handle the check.

The humans involved could read the check by visually looking at the numbers. The machine would read the check by scanning the numbers magnetically, like a tape recorder.

(To Be Continued)

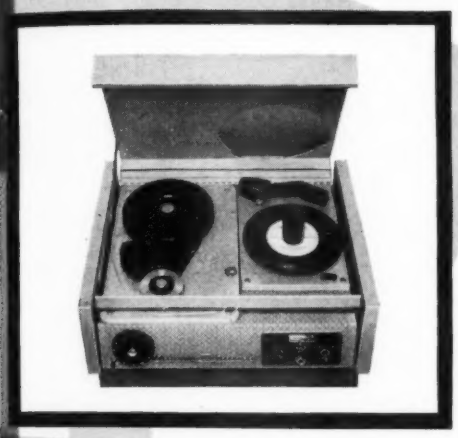
ELECTRONIC SECRETARY

TWO EASY WAYS TO INCREASE

DU KANE PAGING AND ALARM SYSTEMS

LEICH

A MEMBER OF THE GENERAL TELEPHONE SYSTEM — ONE OF AMERICA'S GRE COMMUNICATIONS SYST



Offer your subscribers Electronic Secretary service. This marvelous machine gives them efficient, automatic telephone answering and message recording service 24 hours a day.

It answers subscribers' telephone calls while they are away, and gives a uniform recorded announcement to their customers, clients, and friends. It saves them time and money.

Here's an example of what Electronic Secretary does for you, the average telephone company. If you invest $415 in an Electronic Secretary DCR-1 Answering and Recording Unit, you receive $150 rent a year from the subscriber. This means you receive a 36% return on your investment the first year. You earn another $15.00 as an installation fee. The Electronic Secretary can be installed in 5 minutes —can be located anywhere.

Every business is a potential user of the Electronic Secretary. Service companies, churches, homes, doctors, lawyers, brokers, and theatres are a few. Several models are available. Write Leich for more details.

SE REVENUE FOR YOUR TELEPHONE COMPANY

Many telephone companies are earning substantial monthly revenue from DuKane Paging and Alarm Systems.

These systems provide electronic audio equipment for transmitting vocal messages or signals throughout a building. They are also available for making announcements, or broadcasting music.

Switchboard attendants, like those pictured here, can operate a DuKane System easily. The paging microphone is conveniently located on top of the switchboard.

Many business firms have found DuKane Paging and Alarm Systems much more flexible and efficient than a code call on a PABX. The DuKane Systems leave the telephone switching equipment free for other duties. Then, too, the DuKane unit can transmit essential information to many people, while a code call can only summon a person to a telephone.

Louden Machinery Co., Fairfield, Iowa, has a Leich PABX that is equipped with an optional paging circuit. This allows any inside telephone to dial a number which connects it with their DuKane unit.

Rates have been established for this DuKane service. Revenue figures from companies now furnishing DuKane Paging and Alarm Systems indicate they are a good investment for you. You can earn over ⅓ of your original investment each year. Write Leich for more details.

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manufacturers of telephones, switchboards and related apparatus since 1907

Design and Operation of Small Companies

By R. J. POLLOCK

Part 6
Planning the Central Office Building

A CENTRAL office building design that does not provide for future expansion or structural changes, which might be necessary to accommodate the future service requirements of the community, could be a very expensive design. Past experience has shown that many times expensive additions must be made to comparatively new buildings because the future requirements of the area were not studied carefully.

We know of cases where, within five years, an addition of one-half the size of a new building to house 1,000 line central office equipment has approximated the cost of the original building. This cost not only includes the increased cost of building construction material and labor to erect the addition, but also takes in the cost of removal of or changes in outside walls of the original structure, along with the cost of erecting temporary construction required to protect central office equipment, and to keep it in operating order, throughout the enlargement job. The cost of building the additions, of course, will vary, depending upon the type and size of the original building.

While the problem of caring for future growth, from a building standpoint, cannot be solved in a simple manner in all exchanges, in larger exchanges it can be handled by establishing an unattended office in an outlying area, especially if the unforeseen growth is concentrated in one direction. Here, the cost of trunk cables and lesser building costs at the outlying site normally should be less than the enlargement costs at the wire center location.

Unattended Exchange Buildings

The cost of erecting unattended exchange buildings, in the majority of cases, is lower than the cost of a main central office building. Following are some suggestions which can be considered in the construction of unattended office buildings.

Slab foundation construction, on a considerably cheaper plot of ground, can be used for a prefabricated metal building which will serve the purpose and, which, at the same time, will require a smaller capital investment. Here the slab should be constructed on a gravel fill which is completely settled and which is above the natural drainage level of the location.

In the northern climates where frost conditions exist, it should be constructed with additional metal reinforcing to make it a free-floating homogenous unit. Objections have been made to this type of foundation because of moisture conditions encountered from seepage through the concrete slab. This can be overcome by casting a vapor barrier material in the slab. This plan actually divides the slab into two parts which is not very satisfactory.

A more desirable plan is to cast the bottom two-thirds of the slab with concrete composed of sand and gravel aggregate and the top one-third with lightweight aggregate. In pouring lightweight concrete, the maximum benefit can be secured only if the required amount of water is mixed with the aggregate before the cement is added.

If the water is added after the cement has been mixed with the aggregate, the process will permit cement to enter the minute air spaces in the aggregate and, thus, defeat the purpose of the lightweight concrete to a large extent.

If the plan is followed, no additional water should be added to the mixture on the job as is usually the case in connection with ready-mixed aggregate composed of sand and gravel.

The finished slab surface should be troweled only enough to give a relatively smooth level surface, to which a waterproof mastic should be applied to seat the floor tile after the building is completed. The insulating characteristic of lightweight concrete will tend to keep the floor temperature nearer to that of the room which will greatly reduce the possibility of condensation at the floor level during hot and humid weather.

Steel and aluminum prefabricated buildings are available with surface treatments which eliminate rust and corrosion, and they can be constructed on the foundation slab by the supplier or a contractor at a cost considerably below that required for a masonry or wood frame unit.

It is advisable to install a fireproof insulating material on the walls and ceiling and the walls should be covered with a fireproof wallboard. The board need not be placed on the ceiling since it is less expensive to order a metal ceiling with the building and use a regular poured insulation above it. The manufacturer will supply the steel nails with which to attach the furring strips to the building's metal channels to support the wallboard.

The electrical wiring should be on the exposed basis, since the cost will be slightly lower, and inasmuch as appearance is not a governing factor in a building of this type.

Heating these unattended buildings can be accomplished with electric units. The cost of operation of these heaters should be equal or below that of other methods since the electrical energy used will be charged for at the lower rate earned by the volume of current used to operate the telephone power equipment.

Metal buildings used for telephone purposes are different from ordinary types in that they require more ceiling height. Such units should be ordered with at least a 10-foot ceiling to provide for the switchboard and cable runs, along with sufficient space above that for adequate air circulation.

A door of sufficient size to permit the entrance and removal of equipment also should be specified on the building order. The limited time spent in maintaining unattended dial equipment also would suggest that the building be constructed without windows. The exterior of the building does not necessarily require painting, although, due to its height, it presents a taller-than-usual appearance. Painting the side walls a two-tone color will tend to reduce the height from an optical standpoint.

The roof should be painted with an aluminum paint since it will act as a reflector to the rays of the sun and thereby tend to reduce the interior temperature during warm weather. Many units have factory-prepared sur-

faces which accomplish the same purpose.

Cable entrances can be made through the attic by cutting the necessary hole in the gable part of the building. The hole should be lined with a neoprene protector to eliminate cable sheath damage.

The entire building plot if it is not more than 50 feet square should be covered with a surfacing material which will not support vegetation. Normally the type used for surfacing highways is more suitable than common gravel since it will pack more firmly.

Incidentally, while the building slab is being poured, an entrance slab of concrete can be placed which will eliminate much foreign matter being taken into the building by maintenance forces.

Main Exchange Buildings

Slab-type foundations can also be used for larger central office buildings housing complete company operations if they are properly reinforced to carry the load involved. Generally, architects and engineers do not favor this type of construction for large buildings in the northern states unless it is supplemented by footings projecting to or below the frost line. Many building specifications prepared by architects carry a notation that the depth should not be less than 3½ feet, or below the frost line.

The depth of the frost line varies, depending upon temperature and snow conditions and, since most contractors figure the job on the basis of the specified depth, frost heaving would occur if foundation depth were a governing factor.

Sandy sub-soil, which permits good surface drainage, will not support frost heaving, while heavy loams, and especially clay, will more readily precipitate the condition even if the surface drainage is excellent. This is due mainly to the ability to retain water for longer periods of time as compared with sand or coarse gravel.

In the northern tier of states there are many buildings with slab type foundations, having little or no vertical footings, which, after a period of years, have shown no evidence of the effects of frost conditions. In those cases where concrete block structures appear to have been affected by that condition, examination will usually show that the building crack is due to improper masonry work resulting from insufficient mortar bedding between the individual blocks.

However, the slab construction in any case should be cast with sufficient strength built into it to carry the building proper, along with the weight of the central office equipment.

Generally, slab-type construction is limited to one-story buildings since additional conditions, such as concentrated weight at bearing wall locations, will necessitate additional foundation strength at those points. However, the plan is successfully being used in locations where soil and weather conditions are not a problem.

If a full basement is desired to supply space for batteries, rectifying units, workshop, storage and toilet facilities, etc., the foundation footings should be lowered to supply sufficient head space. In this case, the basement ceiling or the first floor slab will have to be reinforced and have sufficient beams to carry the load to a concentrated point where it will be taken by vertical columns for transmission to the sub-soil.

This type of construction will facilitate easier handling for an underground cable entrance from the point of entry to the main distributing frame location. In the case of the slab type, additional construction is required if three or more cables will ultimately enter the building. Underground cable entrances usually present a problem which may require a cable vault or conduit entrances direct to the main frame location. The size and number of cables entering the building will be the governing factor as far as the type of construction is concerned. Normally, a cable vault is desirable if future service demands require additional cable or enlargements. Exposed cable runs on basement walls and ceiling will ultimately result in a recommendation for their enclosure by the fire insurance company.

A building having concrete floors between the underground entrance and the main frame will require a slot or individual sleeves for each cable in order to reach the frame location. This method requires the exact locating of those points before the concrete is poured.

If the main frame details are not known at that time, future difficulty might be encountered. In those cases, it is advisable to eliminate these cable entrance points and drill the necessary holes after the exact location is known since modern concrete drilling tools and methods have greatly simplified a job of this kind.

The type of foundation used will be determined by the state and local building codes, especially on larger buildings.

The use of masonry side walls will supply fireproof construction and can be constructed with various types which are usually available in the locality. The units which are made of aggregate other than sand and gravel have insulating characteristics which will eliminate the necessity of plastering the inside walls.

Metal doors and windows with screen and storm accessories are available which require very little labor to make a change. Usually, maintenance costs on them is well below that required for those of wood construction. Also, with reasonable upkeep, the expected life of metal doors and windows will be equal to that of the building itself. In northern climates the objection to their use is often governed by heat loss, which results mainly because of the increased conductivity. However, if the fire hazard and increased maintenance cost of wood compared to metal are studied, the resulting economy will be evident.

There are various outside wall surfaces to be considered, from brick to stucco facing; selection should follow the general local practices.

The use of stucco exterior facing should be studied carefully since it will not require the additional investment which would be encountered if brick veneer were used, and it will give a very durable and attractive surface under present-day material and methods of application.

This, of course, applies to northern climates where, until recent years, the use of stucco was not practical. Experiences gained from its use on other local buildings should supply the data needed to determine whether or not it should be used.

Roof construction, in connection with masonry side walls, should meet fireproof requirements; materials available today greatly simplify meeting those requirements.

Steel "I" beams for roof supports are available in sizes which will eliminate interior supporting columns, thereby supplying unobstructed floor space for central office equipment. Modern on-the-job welding technics permit the incorporation of smaller "I" beam construction, whereby the roof load can be distributed in the supporting web to eliminate all roof joists. Generally, this type of construction is not desirable for smaller telephone buildings, especially from the cost standpoint.

It is more economical to transmit the roof load through a center line "I" beam to the outside bearing walls, pilasters and center supporting columns, if any, by means of web-type metal joists. Joists of this type are designed to facilitate easier application of metal and slab-type roof foundations, along with a support for the finished ceiling

(Please turn to page 57)

What Lies Ahead In Our Industry

by WALTER G. WRIGHT*

WHEN ASKED to appear on this program, the question of subject material arose. An attempt was made to approach this from the standpoint of what would have the most universal appeal from the standpoint of common interest to our small as well as larger operators. When viewed from this angle, I think the question of projecting our thinking into the future is a subject which should have great appeal to everyone in all phases of the communications industry. Accordingly, I have chosen the subject "What Lies Ahead in our Industry" as a term which connotes this idea of objective thinking for the future.

There has been much written and said in recent years by many people in all types of industry about "looking into the future," "long-term-planning," "fundamental planning" or whatever terms may be used to describe this very essential function of management.

Furthermore, this planning should be considered not only as a function of management but of everyone in the business, for in the years which lie ahead the degree of success of any enterprise will be largely in proportion to the amount, scope and soundness of one's planning for the future.

As all of you know, we are celebrating the 60th anniversary of the organization of the USITA this year. In connection with this, many things have been said about the progress made over these 60 years. However, I wish to temper this justifiable pride a bit by asking all of us to do a little soul-searching and self-criticism and recognize our shortcomings if we are to progress over the next 60 years and beyond.

Your indulgence is requested therefore for what may appear to be in part critical remarks which are intended only to overcome complacency and provoke some productive thinking for the future in the hope that if enough of us really do some realistic long-term planning, we shall not only maintain but improve our relative position in the expanding economy of this country.

Three Factors in Planning

I suppose the three most apparent factors affecting our planning for the future are the growth in population, the changes in living habits, and industrial developments. Many of you no doubt noticed the recent article in *US News and World Report*, issue of August 9, of this year, which attempted to sectionalize by states the expected growth in population of 60 million amounting to 36 per cent over the next 20 years. Your state of Michigan was among those states with a relatively high percentage, showing 42 per cent. There is no question therefore but what our industry in Michigan has a problem lying ahead of proper long-term planning.

To the student of growth, I believe it is apparent that even small companies are becoming aware that long-term planning will be necessary to survive in the increasing competition for the consumer's dollar.

As a regulated utility, we may feel at times that we are not affected by competition. If so, we make a serious mistake because we must not lose sight of the consumer's dollar and the value he places upon it as to what it will buy in goods and services. The operator who believes that the way to meet this competition is to keep today's product at a cheap price is in for a rude awakening and has not been aware of what has been going on around him.

W. G. WRIGHT

The progress made in the quality of goods and services since the close of World War II in all types of industry has been amazing. This progress has been geared largely to the increasing standard of living and the natural desire of people to want better things. Need I say more as to the fallacy of the thinking which advocates the retention of magneto service on a multi-party line basis at rates of $1.50 a month and the keeping of such plant in service as long as it is able to operate at all.

In the face of what other industries are doing, as well as what other companies in our own industry are accomplishing, any attempt to maintain a status quo can result only in the loss of ground which will be evidenced by increasing consumer dissatisfaction with such service, regardless of the price paid and if continued, will become valueless rather than merely cheap.

I hope this introduction will convince the small operator that at least some of the planning to which I refer applies to his situation. You can judge for yourselves how much of this planning you must do and of how much of it you can say with safety, "I'll let George do it."

The importance of planning for the future was very ably presented by the president of our national association, Mr. Donald Power, in a paper before the Ohio Independent Telephone Association convention earlier this year. He discussed the four main essentials to be considered in adequate planning as first, plant requirements, second, financ-

*Mr. Wright is vice president-operations of General Telephone Corp. He presented this address at the recent Michigan Independent Telephone Association convention.

The Fifty Largest Utilities as listed in the 1957 FORTUNE DIRECTORY

★ American Tel. & Tel. (New York)
★ Pacific Gas & Electric (San Francisco)
★ Consolidated Edison of New York
★ Commonwealth Edison (Chicago)
★ American Gas & Electric (New York)
★ Tennessee Gas Transmission (Houston)
★ Public Service Elec. & Gas (Newark, N. J.)
★ Southern California Edison (Los Angeles)
★ Southern Co. (New York)
★ Detroit Edison (Detroit)
★ Philadelphia Electric (Philadelphia)
★ Niagara Mohawk Power (Syracuse, N. Y.)
★ General Telephone (New York)
★ El Paso Natural Gas (El Paso, Texas)
★ Columbia Gas System (New York)
★ General Public Utilities (New York)
★ Consumers Power (Jackson, Mich.)
★ American & Foreign Power (New York)
★ American Natural Gas (New York)
★ United Gas (Shreveport, La.)
★ Texas Utilities (Dallas)
★ Middle South Utilities (New York)
★ Pacific Lighting (San Francisco)
★ Texas Eastern Transm. (Shreveport, La.)
★ Consolidated Natural Gas (New York)
★ Central & South West (Wilmington, Del.)
★ New England Electric System (Boston)
★ Pennsylvania Power & Light (Allentown)
★ Union Electric (St. Louis)
★ Ohio Edison (Akron)
★ Virginia Electric & Power (Richmond)
★ Peoples Gas Light & Coke (Chicago)
★ Northern States Power (Minneapolis)
★ Cleveland Electric Illum. (Cleveland)
★ West Penn Electric (New York)
★ Duke Power (Charlotte, N. C.)
★ Long Island Lighting (Mineola, N.Y.)
★ Baltimore Gas & Electric (Baltimore)
★ Duquesne Light (Pittsburgh)
★ Northern Natural Gas (Omaha, Neb.)
★ Wisconsin Electric Power (Milwaukee)
★ Transcontinental Gas Pipe Line (Houston)
★ Panhandle Eastern Pipe Line (New York)
★ Public Service of Indiana (Plainfield)
★ Florida Power & Light (Miami)
★ Illinois Power (Decatur, Ill.)
★ Western Union Telegraph (New York)
★ Boston Edison (Boston)
★ New York State Electric & Gas (Ithaca)
★ Cincinnati Gas & Electric (Cincinnati)

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Among the 50 largest utilities, only <u>one</u> electric or telephone utility is a Preformed prospect...

the rest are Preformed customers

In July, 1947, Preformed Line Products Company didn't have a customer; all the electric and telephone utilities were prospects. Today, the situation is almost completely reversed.

For example, in FORTUNE's list of the "Fifty Largest" utilities, only one of the *electric* and *telephone* utilities mentioned is still a prospect; all the rest are now Preformed customers. In other words, the Preformed principle of using preformed helical rods for line accessories has gained almost complete acceptance in only 10 years.

If you are among the few utilities not utilizing Preformed, you might ask "Why?". PREFORMED LINE PRODUCTS COMPANY, 5349 St. Clair Avenue, Cleveland 3, Ohio. Cable Address: Preformed-Cleveland ...in 10 years the leading manufacturer or armor rods, dead-ends, Guy-Grip dead-ends, splices and other line accessories.

PLP

You can look up to Preformed

ing requirements, third, revenue requirements, and fourth, new business promotion.

I propose to explore from a somewhat different viewpoint the first of these essentials; that is, plant requirements, and to some extent the last mentioned one, that is new business promotion and merchandising as affecting the planning for plant requirements of the future.

Planning and Cost Reduction

I wish to deal with this question of planning for plant requirements not so much from the viewpoint of satisfying future service requirements as envisaged in normal budget planning and the associated economic selection based on the tools, equipment, and materials available today, but rather from the viewpoint of what must be done, particularly for the long term, in plant design and technical developments with emphasis upon reduction in the unit cost of our local exchange plant.

I believe this reduction in unit cost of local plant facilities is essential to any realistic "looking into the future" we may do since it becomes the controlling element in the amount of financing and added revenue requirements necessary to meet our customers' communication needs and desires.

This question of customers' desires has been given increased attention of late and several companies have set up organizations to deal with Customer Products Planning as an integral part of merchandising.

The well-known TV personality Art Linkletter calls his program "People Are Funny," which title substantiates what those in Customer Products Planning refer to as people being unpredictable, particularly as to their likes and dislikes. They usually don't know what they want until they see it and then weigh its cost in relation to what else is on the market.

Despite such limitations, the present day concept of merchandising tries to determine these consumer wants in looking ahead as to the effect of these wants on plant and equipment design.

It may well be that our suppliers rather than our operators should take the lead in this respect and perhaps we in the operating field have been somewhat remiss by not being more explicit and demanding upon our suppliers as to what we think should be made available to us to meet the service demands we have experienced and are able to foresee. An attempt will be made therefore to highlight some areas in which we should concentrate our efforts as Independents to best protect our interests.

Independent Interests

Perhaps the best way to pinpoint our interests as Independents is to differentiate between these and Bell interests, never forgetting however that the public's interest is still paramount.

When viewed from this approach we must recognize the basic difference between Independent and Bell operations. The Bell System controls well in excess of 95 per cent of the common carrier long distance channel facilities while serving less than 35 per cent of the geographical area of the country insofar as local exchange service is concerned.

It is also a fact that development of the art has been concentrated on the long distance channel facilities during the past several decades. I do not mean to infer that this ownership relationship was necessarily responsible for this disproportionate progress in the development in the art between local and long distance.

Obviously there have been far more opportunities offered for lowering the cost of the long distance business, by its very nature, than exist in the economics of the local exchange portion of our industry.

To illustrate what this development has done to tariffs, it is worth noting that a minimum station-to-station call across the U.S. 30 years ago cost $16.50 (and remember these were high-value dollars) as compared to approximately $2.50 now at present-day dollars. You all know what has happened to local service charges over these intervening years.

Let us never forget however, and this is basic, that we Independents are primarily in the local exchange service phase of the industry which, unfortunately, up to the present at least, is the increasing unit cost and decreasing return phase of the industry as contrasted to the decreasing unit cost and therefore increasing return prevailing in the long distance part of the industry.

As a corollary to this, we must also always bear in mind that if the local networks had not been developed, there would be little need for long distance channels.

Improved Toll Settlements

Partial recognition of these facts has led to the progress made since World War II in the improved participation in the long distance revenue dollar which has been achieved by the Independents.

I personally feel we still have a long way to go in this respect if we are to be wedded to present separation procedures and current limitations placed upon the cost approach in intercompany toll settlements.

If any further support is necessary to the validity of this last statement, let us consider for a moment the general trend over the past 10 years in per-station revenues and per-station costs.

In case you haven't made such an analysis for your own company, you might find it very revealing to plot a series of curves on the per station performance in your company which would show the total revenue per station and total expenses per station. Then show the makeup of the revenue per-station curve by plotting separately the exchange revenues per station and the toll revenues per station.

I have made such an analysis for several companies and although the relationship may vary somewhat depending upon the relative proportion of toll lines owned by the companies, I believe you will find that from 1946 onwards there has been a steady increase in the per-station revenue. The latter, of course, was necessary to meet the increasing costs over which we had little control and which prompted the several applications for increases in the charges for local service over this period.

Now here is the significant fact. If we still further break down per-station revenue data between local and long distance, we find that the lion's share of the increase in per-station revenues has occurred in the local service revenues.

Some of this may be due to the gradual introduction of extended area service and the associated replacement of short-haul toll revenue by exchange revenue though, in those cases I have reviewed at least, I noted that despite the two major improvements in toll settlements which have been negotiated between the USITA and the Bell companies, only a slight improvement in toll revenue per station has resulted over recent years with most of the increase in revenue necessary to carry the increased cost of doing business being realized from increases in local service charges.

We in the Independent industry, of course, have little or no control over the tariffs for the long distance business, as in most cases we concur in Bell tariffs in the interest of uniformity of charges.

Furthermore, we must recognize that in the same postwar period, relatively few revisions have been made in long distance tariffs as contrasted to the several larger increases in local tariffs which have been obtained through the

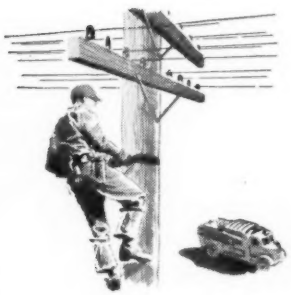
(Please turn to page 38)

The world of science behind EXIDE-MANCHEX BATTERIES

Being interviewed is J. P. Malloy, Chief Control Engineer. Shown at lower left is a positive plate from an Exide-Manchex Battery.

"High purity lead prolongs battery dependability"

At the Exide Laboratories—**Reporter:** Just exactly how pure is the lead in Exide-Manchex positive plate buttons, Mr. Malloy?



Malloy: There is less than one-hundredth of 1% active impurity.

Reporter: How do you insure and maintain such a high degree of purity?

Malloy: We test every new batch of lead here in our laboratory before we approve it for use.

Reporter: How does this high purity lead extend battery dependability?

Malloy: It converts to active material at the proper rate. Over years of use, these Exide-Manchex Batteries retain their capacity to provide full power when needed.

Reporter: Obviously, this is an important feature of Exide-Manchex Batteries.

Malloy: Yes it is. But it's only one of the many engineering details that contribute to their long life and high performance.

Note to battery users: Whenever you order batteries for float or cycle service in stationary applications, be sure to specify Exide-Manchex. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Phila. 2, Pa.

THE ELECTRIC STORAGE BATTERY COMPANY **Exide**®

THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

NO HOLIDAY IN OUR YEAR may be compared to Thanksgiving, nor is there any quite like it anywhere else in the world. It celebrates nobody's birthday, no battle or war, the fall of no bastille, no revolution. It is simply the holiday of grateful people, who have worked all the year and now stop to express thanks to God. It is the holiday of peace, the celebration of work, blessings of the soil, and appreciation of the wholesome, simple life.

Thanksgiving Day is a fixed and permanent American institution. It is a beautiful custom, inaugurated in the beginning of our history, and carefully observed ever since. It is an outgrowth of the religious character of the American people. It is a recognition of our dependence upon God.

As a nation, we are indebted to Almighty God, and it is befitting us that we all unite in a prayer of thanksgiving to Him for His continued blessings. The spirit of confidence and faith in God inspired the founders of our great Republic to begin the Constitution of the United States with these words: "We, the people of the United States, grateful to Almighty God for our freedom. . . " Only as long as this confidence and faith in God survive, shall America and freedom endure.

Thanksgiving is infinitely more than a holiday, vastly more than good fellowship, profoundly more than a time of feasting. It is a time of genuine Thanksgiving to God Almighty who is so wonderfully blessing America.

As the day approaches, we in America should be humbly thoughtful and gratefully thankful for His care and guidance. True, we all have our sorrows, our doubts, our fears, but never are we without His divine help.

On April 5, 1621, the Mayflower sailed away and the Pilgrims were cut off from the outside world. Life had been tough for them and the dead were numerous. Still, aided by some Indians, these English folk had learned how to grow corn and they had 20 acres of it.

Then the Indian summer came along in its blaze of New England colors, and they decided on a harvest festival of thanksgiving. According to George F. Willison in his "Saints and Strangers," they had:

"Venison, roast duck, roast goose, clams and other shellfish, succulent eels, white bread, corn bread, leeks and watercress and other 'sallet herbes,' with wild plums and dried berries as dessert—all washed down with wine, made of the wild grape, both white and red. . ."

Massasoit came with 90 braves, who did very well with the food.

Life, however, became increasingly more difficult. Out of their hardships they built our great nation, and each year, more or less, there has been a Thanksgiving Day.

It is regrettable that nowadays we celebrate all of our holidays as days of material pleasure. One would imagine that we were not thankful to God but to the turkey, just as Christmas has been made a holiday for exchange of gifts, not for religious worship. It is characteristic of our time that this should be so, because we live in a materialistic age when little else counts but what is provable and demonstrable.

So, on Thanksgiving day, we gorge, but do not pray; we thrill to the turkey, but not in humility; we fail to thank God that we live in this free land and that neither the course of events nor the stupidity of men nor the debasement of public and private morals has destroyed our liberties.

What are the blessings for which we should be thankful?

Our rich inheritance from Jewish and Christian culture and religious idealisms.

Our sense of courage and determination not to surrender to the forces of evil and tyranny.

Our faith in the infinitely just, wise and merciful God.

The large measure of personal and family liberty that we still enjoy as citizens of the United States.

Our sense of destiny, not because of material prosperity, but because of our democratic institutions and principles.

Our vision of the coming of a better day of brotherhood among all the peoples of the earth.

Our unity of purpose amid great diversity of opinions and procedures.

As telephone folk, men and women who believe in God and Country, we can set a shining example for the nation on Thanksgiving Day by going to our chosen places of worship with gratitude in our hearts for the many blessings we enjoy every day of the year.

Stand for Free Enterprise

"I am in accord with the principles which have been responsible for the establishment and development of our incomparable system of free enterprise. I am glad to see the Virginia Electric & Power Company, and other private power companies, not only expressing their readiness to undertake the construction of generating plants needed to meet the service demands of their territories but asserting their right to do so."—THOMAS B. STANLEY, *governor of Virginia.*

A Philosophy of Government

"The government today should be thinking of collecting an increasing amount of money for its needs from a low rate of taxation applied to a rapidly expanding economy. Instead, it is collecting a small amount of money from high rates that put a drag on the economy's expansion, and are actually drying up the wells of progress."—PHILIP M. TALBOTT, *president, Chamber of Commerce of the United States.*

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...new solution to old problems!

● Copperply, with its high strength steel core and concentric rust-proof coating, is ideal for long-span installation. And, it has the decided advantage of versatility to include future carrier circuits without additional line construction. Copperply conforms to ASTM Specification B-227-52 and can be installed in accordance with accepted construction practices.

In insulated wire applications, substantial savings can be realized both in the insulating process and subsequent line installation due to the availability of continuous 600 pound, non-welded lengths.

Your own experience will point to various other applications where the high strength, high conductivity and extreme uniformity of electroplated Copperply will do a better job and save dollars.

We are now producing Copperply communications wire in all standard sizes from No. 3 to No. 12 AWG, with either 30% or 40% conductivity and in both high and extra high strength grades. Check with your distributor, or write to National-Standard.

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DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; *tire wire, stainless, music spring and plated wires* • **WORCESTER WIRE WORKS, Worcester, Mass.;** *high and low carbon specialty wires* **WAGNER LITHO MACHINERY, Secaucus, N. J.;** *metal decorating equipment* • **ATHENIA STEEL, Clifton, N. J.;** *flat, high carbon spring steels* • **REYNOLDS WIRE, Dixon, Ill.;** *industrial wire cloth*

TELEPHONY'S Traffic Engineering Handbook

By Gilbert R. Brackett

Nov. 23, 1957

Part 6 (Continued)

Intercepting Trunks

Calls to vacant connector terminals, vacant toll selector levels and vacant local selector levels affected by directory errors, calls to stations which have been disconnected or have had the numbers changed, and other traffic, which calls for interception for any reason, shall be routed to the intercepting operator.

Intercepting trunks may terminate on jacks in the multiple but usually they are routed via concentration equipment to intercepting positions for trunking economy.

The number of intercepting trunks at the larger central offices should be provided on the basis of one trunk per 100 connector terminals. At small offices all vacant selector levels and all vacant connector terminals may be arranged to provide a busy tone or preferably a recorded announcement.

Out Dial Connector Trunks

These trunks are used by the attendant to complete calls to dial stations. Usually they are provided on the basis of one trunk per connector for handling the terminating traffic.

Conference Equipment (PBX)

Manual conference equipment consists of a group of five jacks and associated apparatus arranged so that connections may be established by the operator by means of regular cord circuits. The equipment provides for a conference between a maximum of five stations; four stations and one trunk or tie trunk; or three stations and two trunks or tie trunks. The five special jacks can be located either in the station or outgoing trunk multiple and they must be adjacent to each other. To establish a conference connection, one cord of a pair is connected to each station or trunk involved and the other cord of the same pair to a conference jack. Usually, one appearance of the equipment is sufficient although multiple appearance may be provided.

Reverting Call Switches

These switches, sometimes called selectors, are provided to enable one station on a party line to dial another station on the same line. They are also arranged to permit a repairman to ring the bell of the station on which he is working for a ring test of that bell.

To reach a particular party on his line, the caller dials a special code number plus either a single digit or a two-digit number, instead of the telephone number listed in the directory. After dialing the number, the calling party hangs up and this causes both his and the called party's bells to ring alternately. When the call is answered, the ringing ceases which tells the calling party the called party is on the line; he then removes his handset from the cradle and begins the conversation.

The reverting call switch does not release on the first restoration of the receiver (that is prior to the ringing period), and will not release until the parties have finished talking and both hang up.

Hundred Call Seconds and Per Cent Use at Various Service Levels for Group Sizes of 1 to 50

The table number indicates the number of calls per 1000 encountering all equipment in the group busy

Trunks	TABLE 1		TABLE 5		TABLE 10		TABLE 20		TABLE 30		TABLE 40		Trunks
	CCS	% Usage	CCS	% Usage	CCS	% Usage	CCS	% Usage	CCS	% Usage	CCS	% Usage	
1	.1	.1	.2	.5	.4	1.0	.7	2.0	1.1	3.1	1.5	4.2	1
2	1.6	2.3	3.7	4.8	5.4	7.5	7.9	10.9	9.7	13.5	11.3	15.7	2
3	6.9	6.4	12.2	11.3	15.7	14.5	20.4	18.9	24.0	22.2	26.9	24.9	3
4	15.4	10.7	24.2	16.8	29.6	20.6	36.7	25.5	41.6	28.9	45.7	31.8	4
5	26.6	14.8	38.9	21.6	46.1	25.6	55.8	31.0	61.6	34.2	66.6	37.0	5
6	40.0	18.5	55.4	25.7	64.4	29.8	76.0	35.2	82.8	38.3	89.3	41.3	6
7	54.7	21.7	73.4	29.1	83.9	33.3	96.8	38.4	105	41.7	112	44.4	7
8	70.9	24.6	92.5	32.1	105	36.5	119	41.3	129	44.8	137	47.6	8
9	88.2	27.2	113	34.9	126	38.9	142	43.8	153	47.2	162	50.0	9
10	107	29.7	134	37.2	149	41.4	166	46.1	178	49.4	188	52.2	10
11	126	31.8	156	39.4	172	43.4	191	48.2	204	51.5	214	54.0	11
12	145	33.6	178	41.2	195	45.1	216	50.0	230	53.3	240	55.6	12
13	166	35.5	201	42.9	220	47.0	241	51.5	256	54.7	267	57.1	13
14	187	37.1	224	44.4	244	48.4	267	53.0	283	56.1	295	58.5	14
15	208	38.5	248	45.9	269	49.8	293	54.3	310	57.4	322	89.6	15
16	231	40.0	273	47.4	294	51.1	320	55.6	337	58.5	350	60.8	16
17	253	41.3	297	48.5	320	52.3	347	56.7	365	59.6	378	61.8	17
18	276	42.6	322	49.7	346	53.4	374	57.7	392	60.5	407	62.8	18
19	299	43.7	347	50.7	373	54.5	401	58.6	420	61.4	436	63.8	19
20	323	44.9	373	51.8	399	55.4	429	59.6	449	62.4	465	64.6	20
21	346	45.8	399	52.8	426	56.4	458	60.6	478	63.2	494	65.3	21
22	370	46.7	424	53.5	453	57.2	486	61.4	507	64.0	523	66.0	22
23	395	47.7	451	54.5	480	58.0	514	62.1	536	64.7	552	66.7	23
24	419	48.5	477	55.2	507	58.7	542	62.8	564	65.3	582	67.4	24
25	444	49.3	504	56.0	535	59.4	571	63.4	593	65.9	611	67.9	25
26	469	50.1	531	56.7	562	60.1	599	64.0	623	66.6	641	68.5	26
27	495	50.9	558	57.4	590	60.7	627	64.5	652	67.1	671	68.9	27
28	520	51.6	585	58.0	618	61.3	656	65.1	682	67.7	701	69.6	28
29	545	52.2	612	58.6	647	62.0	685	65.6	711	68.1	731	70.0	29
30	571	52.9	640	59.3	675	62.5	715	66.2	741	68.6	762	70.6	30
31	597	53.5	667	59.8	703	63.0	744	66.7	771	69.1	792	71.0	31
32	624	54.2	695	60.3	732	63.6	773	67.1	801	69.5	822	71.4	32
33	650	54.7	723	60.8	760	64.0	803	67.6	831	69.9	852	71.7	33
34	676	55.2	751	61.4	789	64.5	872	68.0	861	70.3	883	72.1	34
35	703	55.8	779	61.8	818	64.9	862	68.4	891	70.7	913	72.5	35
36	729	56.3	807	62.3	847	65.4	892	68.8	922	71.1	944	72.8	36
37	756	56.8	836	62.8	878	65.8	922	69.2	952	71.5	975	73.2	37
38	783	57.3	864	63.2	905	66.2	952	69.6	982	71.8	1006	73.5	38
39	810	57.7	892	63.5	935	66.6	982	69.9	1013	72.1	1037	73.9	39
40	837	58.1	921	64.0	964	66.9	1012	70.3	1043	72.4	1069	74.2	40
41	865	58.6	950	64.4	993	67.3	1042	70.6	1074	72.8	1099	74.4	41
42	892	59.0	979	64.7	1023	67.7	1072	70.9	1104	73.0	1130	74.7	42
43	919	59.4	1008	65.1	1052	68.0	1103	71.3	1135	73.3	1161	75.0	43
44	947	59.8	1036	65.4	1082	68.3	1133	71.5	1166	73.6	1192	75.3	44
45	975	60.2	1066	65.8	1112	68.6	1164	71.8	1197	73.9	1223	75.5	45
46	1003	60.6	1095	66.1	1142	69.0	1194	72.1	1228	74.2	1255	75.8	46
47	1030	60.9	1124	66.4	1171	69.2	1225	72.4	1259	74.4	1286	76.0	47
48	1058	61.2	1153	66.7	1201	69.5	1255	72.6	1291	74.7	1317	76.2	48
49	1086	61.6	1183	67.1	1231	69.8	1286	72.9	1322	74.9	1349	76.5	49
50	1115	61.9	1212	67.3	1261	70.1	1317	73.2	1353	75.2	1381	76.7	50

Trunk Capacity Table

To Ascertain the Number of Reverting Calls Switches Required

Generally it can be assumed that 5 per cent of the CCS originating on party lines will be reverting traffic.

When an exchange is equipped for 100 per cent lockout, the 5 per cent CCS for reverting traffic should be multiplied by 15 per cent to obtain the load on the reverting call switch group.

Example:

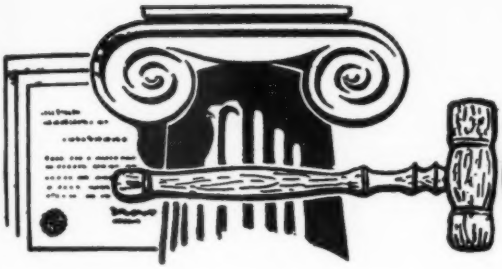
Assume office is not equipped for lockout. There are 320 party lines with a CCS of 1.8 per line.

1.8 CCS × .05 = .09 CCS reverting per line.

320 lines × .09 = 28.8 CCS reverting per office.

The accompanying "Trunk Capacity Table (Sub-table 10) reveals that a CCS of 28.8 will require four trunks, or reverting call switches to care for the load.

(Please turn to page 53)



Courts and Commissions

Ohio Companies Given OKs On Financing Proposals

The Ohio Public Utilities Commission recently granted two requests for approval of financing plans.

The Mansfield Telephone Co. was authorized to sell 5¼ per cent sinking fund debentures due 1987, in the aggregate principal amount of $2,000,000. The debentures are to be sold at 100 per cent of the principal amount and will bear interest at the rate of 5¼ per cent per annum. The proceeds will be used to reimburse the company's treasury for capital expenditures.

The company was also authorized to pay a stock dividend by issuing 10,494.6 shares of its no par common capital stock with the stated value of $29.61 per share, aggregating $310,745.11. Shares are to be distributed to the holders of the common capital stock on the basis of one dividend share for each 10 shares presently outstanding.

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The Germantown Telephone Co. received authority to sell its 5¾ per cent first mortgage bonds in the aggregate principal amount of $200,000, the proceeds of which shall be used to retire presently issued and outstanding short-term notes. The bonds are to be sold at the best terms available on the current market.

The company was authorized also to issue and sell 4,400 shares of its common capital stock with the par value of $5.00 aggregating $22,000. The proceeds are to be applied to the financing of additions, extensions and improvements and the balance, if any, used to reimburse the company's treasury for capital expenditures.

Ill. Company Asks to Buy

The Western Illinois Telephone Co. recently filed application for authority to purchase the North Henderson Mutual Telephone Exchange; also for permission to construct, operate and maintain telephone systems in the areas presently served by Alpha Mutual Telephone Co. and Rio Telephone Co.

Two Louisiana Companies Request Raise in Rates

Southwestern States Telephone Co. on Nov. 18 was to have a hearing before the Louisiana Public Service Commission on its appeal for increased rates in the parishes of Beauregard, Allen, Evangeline, Calcasieu, Jefferson Davis and Acadia.

The Reserve Telephone Co. was to have a hearing on the same date on its request for a raise in rates.

The Forest Hill Telephone Co., Inc., recently received approval of its request to dismiss its rate petition (TELEPHONY, Aug. 17, p. 30).

Mississippi Court Hears Southern Bell Rate Appeal

A rate appeal by Southern Bell Telephone & Telegraph Co. in Hinds County, Miss., Chancery Court—from a Mississippi Public Service Commission decision of Dec. 20, 1956—was taken under advisement on Nov. 12 by Chancellor L. Arnold Pyle (TELEPHONY, Jan. 12, p. 27).

The commission had denied Southern Bell's request for a 2½-million-dollar rate increase.

Ohio Independent Gains Increase in Rates

The Ohio Public Utilities Commission recently authorized the Lorain Telephone Co. to increase rates, effective Nov. 1 (TELEPHONY, Sept. 7, p. 40).

The commission authorized total gross revenues in the amount of $3,072,-863.95 to give the company a return of 4.88 per cent on investment.

The raise in rates will represent an increase of $482,892.68 in revenues, a commission spokesman said.

H. E. Hageman, president of the company, said that the commission, in addition to approving an increase in rates, also authorized certain changes in the company's general exchange tariff and addition of new services.

The new monthly rates for residence telephone service will be:

Six dollars for one-party service, compared with the present rate of $4.75 in the city of Lorain and $5.75 in rural areas.

Five dollars for two-party service, which now costs $3.75 in the city.

Four dollars for four-party service, compared to the present three-dollar city rate and $3.25 rural rate.

For eight-party service, $3.75 compared with the $2.75 present rate for both city and rural.

Most drastically effected by the new rates will be business service in the Amherst, Vermilion, Avon, Avon Lake and Birmingham areas.

One-party service in those areas and Lorain will be $12. Present rate for Lorain is $11 and $11.50 rural.

The one-party line business service in Amherst, Vermilion, Avon, Avon Lake and Birmingham areas at present is $8.00 in the city and $8.50 in the rural areas.

Other new rates for business service will be $10 for two-party service, $7.00 for four-party service and $6.00 for eight-party service.

Export-Import Bank Grants Loan to Cuban Company

The U. S. Export-Import Bank announced that it has authorized a 17½-million-dollar credit to the Cuban Telephone Co.

The negotiations resulted in agreement for an overhaul and modernization of the Cuban company's rate structure; also the installation of 61,000 new telephones by Dec. 31, 1960, at which time total telephones in service will number 212,000, the bank announcement said.

Authorize Sale in Georgia

The Georgia Public Service Commission on Oct. 23 authorized the sale of the Dudley Telephone Co. to the Progressive Rural Telephone Cooperative Inc. of Rentz.

OK Sale in West Virginia

The West Virginia Public Service Commission gave approval on Nov. 6 for the sale of the Wayne Telephone Co.'s physical plant to the Duncan Telephone Co.

XUM

WHY

AN END TO
"OFF-HOOK" TROUBLES

LIFELIKE
TRANSMISSION

MODERN
FUNCTIONAL DESIGN

EASY, ACCURATE
DIALING

SIMPLIFIED
INSTALLATION

COLORS AND
TWO-TONES

TIME-SAVING
MAINTENANCE

XUM

DAYDREAM?

You can get all these features with Automatic's Type 80 Telephone!

Maybe you're still looking for *the* telephone that has *all* the features you want. If so, stop! Automatic's Type 80 Telephone is just what you've been looking for. Want proof? Then read—*slowly please*—the eye-opening points that follow (and note those *exclusive* features):

Automatic's Type 80 Telephone in new Forget-me-not Blue

- **LIFELIKE TRANSMISSION.** Excellent clarity, even on long lines—increases toll calls and toll revenue.
- **NO COSTLY "OFF-HOOK" TROUBLES.** Our "walking handset" (*exclusive feature*) toddles right into the cradle.
- **MODERN, FUNCTIONAL DESIGN.** Have a long look at the illustration and judge for yourself.
- **SIMPLIFIED INSTALLATION.** Time-saving "Installer's Hooklock" (*another exclusive*) keeps hook down—leaves both hands free to work on the telephone.
- **EASIER READING, ACCURATE DIALING.** New slanted dial, extended number plate and guiding arrowheads.
- **LOWER MAINTENANCE COSTS.** All Type 80 components can be removed quickly with just a screwdriver. And all units are equally accessible as well.
- **COLORS.** Build "2nd" telephone sales with Colonial Blue, Sunlight Yellow, Turquoise, Classic Ivory, Garnet Red, Sand Beige, Dawn Gray, Jade Green, Forget-Me-Not Blue, Camellia Pink and Gardenia White.

Want further proof? Then talk to any telephone man who has standardized on Type 80's. There are a lot of them...and they're the best boosters we have (followed closely by their subscribers). Next step is to send in your order. Address: *Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111.*

AUTOMATIC ELECTRIC

A member of the General Telephone System—One of America's great communications systems

GENERAL SYSTEM

WHAT LIES AHEAD IN OUR INDUSTRY

Continued from page 30

lengthy and costly process of frequent applications to the regulatory bodies for a rate relief.

Needs of Local Rate-Payer

In effect, this means that most of our increased costs of doing business have been borne by the local service rate-payer and my question is:

"What can we do in the years ahead to achieve for the local rate-payer the benefits accruing from the development of the art which heretofore have been rendered to the benefit primarily of the long distance user?"

I do not presume to know the answer to this question, but I wish to raise it in order to provoke some thinking on our part as fundamentally an important part of looking into the future. Of course, we can say this is up to the researcher, manufacturer, and supplier. However, we as operators have a responsibility as part of our merchandising program to work closely with our suppliers and bring to their attention what we need in equipment and facilities to meet our customers' requirements and again I say, at a price which they will be willing to pay commensurate with its value to them.

To further illustrate the effect on rates of an increasing unit cost business as contrasted to one with decreasing unit costs, let us look for a moment at some interesting results in the power industry, which is considered a decreasing unit cost utility in contrast to the telephone industry.

A chart published in the Sept. 6, 1957, issue of *Washington Report* of the U. S. Chamber of Commerce shows that the cost of electricity as measured by average domestic rates has been reduced steadily from approximately 7½ cents per kilowatt hour in 1920 to approximately 2¾ cents in 1956.

On the same chart the cost of living index (using 1913 as 100) shows a decrease in the early years of from 400 in 1920 to a low of about 130 in 1933 followed thereafter by a steady and continuing rise to approximately 275 by 1956. This material makes good publicity for the electric industry under a head "Electricity Costs Lowered in the Face of Inflation."

By comparison our industry (including the Bell System) suffers, and yet I am confident that management in our industry is every bit as capable and efficient. Our chief argument to our customers at the time of the heretofore inevitable increase in rates has been to the effect that your telephone bill has not increased to the same extent as the cost of living. This is weak in comparison as to what the power companies can say to their customers on the relatively few occasions they have had to reprice their service.

Industry's Greatest Challenge

This points up our greatest challenge to the future, that we must look to greater developments in the art if we are to minimize the effect of the unavoidable increasing unit cost nature of our business on the price of our end product to our customers. Even at the present time, the laboratories of the Independent industry are working on the development of new types of equipment and we look to their success in these efforts with particular emphasis upon that equipment which will render the greatest benefit to the Independent industry.

As pointed out earlier our interests lie primarily in the local service field and hence I trust the suppliers will put their greatest development efforts along those lines which will tend to reduce the investment in local exchange plant, including switching systems, distribution plant and subscriber equipment.

With labor costs continuing to rise and cost of money recently taking another upward swing, there remains this one major avenue of offsetting these rising costs. I refer to this development of improved and lower cost equipment and material which appears to offer a tremendous field.

In the light of what has been done in other industries in the improvement in production per employe by mechanization and improved techniques, it seems that we in the communication industry have not made comparable progress as yet by taking full advantage of the application to our industry of the recent developments in the electronic field and miniaturization obtainable thereby.

I feel that our suppliers could well afford to take a careful look at their appropriations for development and research with our problems and long-term planning in mind, and perhaps place greater emphasis upon our long-term requirements as contrasted to the short-term approach which at times places too much emphasis upon immediate sales.

For whatever it may be worth to our suppliers in their efforts to look into the future, I wish to point out some statistics on research by quoting from a statement made by President Ralph Cordiner of the General Electric Co. in a talk before the Economic Club of New York a little over a year ago:

"The nation's total bill for research for the previous 25 years through 1955 has been estimated at 44 billion dollars. One half of that came in the 1950s.

"With the inevitable time lag between investment and return, it (this refers to research) can scarcely have begun to pay off. The impact on the future will be tremendously greater.

"Many industries are just awakening to the need for investment in research and development with the result that the national expenditure is now well over five billion a year."

I have also read some McGraw-Hill Department of Economics material on this subject which points out that it takes seven years from the start of research to bring a product to large scale output. Also they point out that as recently as four years ago, the makers of industrial machinery were spending only one cent of each sales dollar on research as compared to three cents for the electrical and chemical industries.

I do not know what part of the sales dollar our Independent suppliers are expending for this purpose, but in view of the seven-year lag referred to, the hour is late. With these remarks in mind, I put this question to our suppliers, "Are you doing your share in this research and development program to protect our segment of the industry for the long pull?"

Full Use of Improvements

Moreover, I do not believe that we in the operating companies have made full use of the improved equipment and materials already available to us. Another important source for reducing costs in the years which lie ahead is improvements in operating efficiency by reviewing our methods and procedures which in many instances could be bettered by the application of recent developments in office management techniques.

Having raised these questions in very general terms, I would like to mention just a few of the fields where I believe opportunities lie for major developments in expanding our local service provided our costs can be lowered in these fields.

(1) *Development of rural service by making individual line service available at lower costs by the application of radio and carrier techniques.* With the Independents serving primarily rural areas, this offers one of the greatest sources for more business provided it can be offered at lowered unit costs.

(Please turn to page 51)

Pilgrim's progress

Since the first Thanksgiving . . . the essence of our progress has been an improving ability to communicate. To share ideas and events *instantly*. Today, Independent telephone companies provide this indispensable service throughout *two-thirds of the entire area of the nation* . . . look ahead to an expanding future built on enterprise.

60 Years
of Growing Service
1897-1957

INDEPENDENT TELEPHONE COMPANIES

helping you reach all America

U.S. Independent Telephone Association
Pennsylvania Building, Washington, D.C.

This 41st USITA national ad appeared in November 4 Time and November 15 U.S. News and World Report

Turkey and Telecommunications

by John Voss

Probably I'm like most of you in being pretty much of a sentimentalist where Thanksgiving is concerned, and for about the same reasons.

First of all, it brings back the happy times of my boyhood—the family all gathered together, the tantalizing smells of good food cooking, and the general feeling that all was right with the world.

One thing in particular always impressed me: the tremendous amount of preparation and all the loving attention to detail my mother put into making the turkey. The stuffing was seasoned just so . . . the bird had to be slow-roasted and come out juicy and tender, but crackling-crisp and golden-brown on the outside.

And I'll never forget those tasty trimmings: the richness of the homemade cranberry sauce . . . the sweet potatoes tasting better than candy . . . the crisp salads . . . the luscious pies (my mother used to serve mince *and* pumpkin). Well, I'm sure you know what I'm talking about, because your mother prepared for the holiday in the same careful, painstaking way.

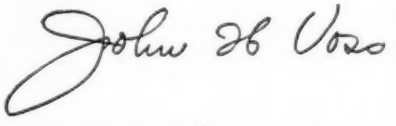
Another thing I like about Thanksgiving — it's such a completely *American* institution. And because of that, I'm reminded once again how proud and grateful I am to be living in the greatest country in the world.

About this time of the year, when I walk around the plant to see how things are going, I'm reminded of my mother's Thanksgiving preparations. That's because our engineers and production people put the *same kind of painstaking care* into the design and manufacture of your telecommunication equipment. This applies to everything from a miniature relay to a complete MDO setup. When our people turn out a job, it's right in every detail—just like Mother's Thanksgiving dinner. I hope you get as much satisfaction from Stromberg-Carlson equipment as I did from those dinners. Judging from some of the letters we get, it looks as if you do!

My inspection tours also remind me of Thanksgiving because the whole process of designing, making and selling goods is just as American as the holiday. I'm thankful that we live in a country where we can compete in the open market and succeed as a result of our own ability to deliver the goods.

The arrival of Thanksgiving, 1957, is to me a welcome reminder of the wonderful times I've had through the years and of my thankfulness for the opportunity to live and work in the United States.

I sincerely hope this holiday brings you the same kind of satisfaction.



Vice President and General Manager
Telecommunication Division

STROMBERG-CARLSON, A Division of General Dynamics Corp., Rochester 3, N. Y.

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WE ARE INDEBTED to D. Reginald Tibbetts, manager of the Moraga (Cal.) Telephone Association for an item from the *San Francisco Examiner* which describes the trouble they are now experiencing on the West Coast because of the letter prefix used in telephone numbers.

It seems that the new EDgewater exchange is having an abnormal volume of wrong number calls because of phonetically-minded people insisting on dialing EG instead of ED and thereby getting a DIamond number instead of Edgewater.

Then, while in Chicago, attending the USITA convention, we noted an item in the *Sun-Times* about someone dialing a wrong number that brought death to a two-month-old boy. A tragic sequence of events began as a mother decided to bathe her son in the kitchen sink of their apartment. This young mother placed her child in about 5 to 6 inches of water. Then the telephone rang. She placed the baby on the sink drainboard and went into the next room to answer the telephone.

The call was a wrong number. She returned, less than a minute after leaving she said, to find the child's head and shoulders under water. A family physician and a fire department ambulance were summoned to the apartment.

The firemen administered oxygen for 20 minutes but to no avail. The child was dead. Police reported that the hysterical mother could only repeat two words over and over: "Wrong number . . . Wrong number."

Wrong numbers always prove most annoying although, fortunately, the great majority do not have a tragic result as in this case.

We are firm in our belief that eventually letters will be eliminated from our telephone numbers and that this action will eliminate many wrong number calls and will thereby contribute much towards the betterment of telephone service.

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It is reported that back in 1900, one engineer was sufficient for every 250 workers in industry. Today, there is a need for one engineer for every 50 workers.

The United States Bureau of Labor made a study of 200 large companies which showed that most of them are unable to hire enough technical personnel to fill their needs and that the shortage of trained scientific personnel has definitely curbed their production capabilities.

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We have a letter from Thomas Joyce, district manager for Automatic Electric Sales (Canada) Limited, in Ottawa, in which he makes the following comment with reference to the report of my vacation spent in Canada, and printed in the September 14 issue of TELEPHONY.

"Re your comments on the Mounties, they never wear the scarlet tunic except as a dress uniform and for ceremonial occasions. You may have seen a number of them around, but their working uniform is a dull chocolate brown color with yellow stripes down the trousers. Also they wear the flat officer-type hats instead of the felt 'campaign' hat. Not very glamorous after the buildup they get in the tourist folders.

"Here in Ottawa, the guard in front of the Parliament Buildings wear the red tunics but this is one of the few places you see them wearing this uniform on duty.

"Got a kick out of your comments on our road signs 'Keep off the boulevard.' For many years in Canada, the grass strip down the center of a divided road, and also the strip between the curb and sidewalks, has been known, for some reason, as the 'boulevard.'

"In the last 10 years, with thousands of foreign-born people arriving, especially in the Toronto area, this term turned out to be pretty confusing to them. They couldn't understand why the signs told them to keep off the boulevard, which to them meant a wide street or roadway.

"The Department of Highways then decided to use another word and hit on the word 'median' (not meridian as mentioned in your article) meaning, according to the dictionary, 'situated in the middle.' This would seem to be just about as confusing. The newer signs, however, all use the word 'median.'

"In Ottawa here, we know exactly what you mean about those utility poles located in the street outside the curb line. On many of the older streets where widening has taken place, the poles were not relocated or have not yet been relocated, and the mortality rate on rear fenders when parking next to the curb on a dark night is especially high."

On this same subject, we also have a nice letter from Julien Thuot, L.S.C., assistant to the president of Quebec-Telephone, Rimouski, P. Q. We also received information on this company which is the largest Independent in Eastern Canada.

The letter points out that it is very unfortunate that we did not have sufficient time to go farther east and visit the picturesque Gaspé Peninsula. We hopé to travel again to Canada some time and when we do we plan to stop and visit the headquarters of this progressive Independent telephone company at Rimouski.

•

It has been estimated that the use of seat belts in all cars and trucks on our highways today would reduce the 40,000 fatalities annually to less than 19,000, and would reduce the one million serious injuries to no more than 500,000.

•

It is claimed that your vacation is a success if your self-winding watch runs down.

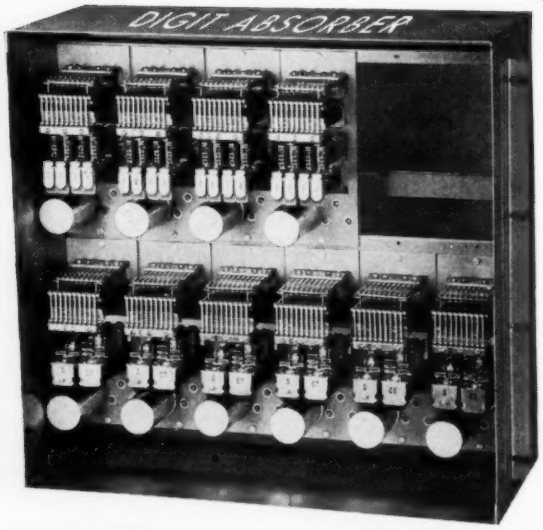
•

The Michigan Bell Telephone Co. recently made a survey of its rural service that involved 60 areas and 52 exchanges. An outside firm contacted 720 rural customers to obtain a uniform sampling. The survey revealed that of the 120,000 rural residence subscribers in the Michigan Bell area, non-farming customers outnumbered the farm customers about five to two.

The predominant telephone user in

Can your Switchboard handle

2-5 DISTANT DIALING?



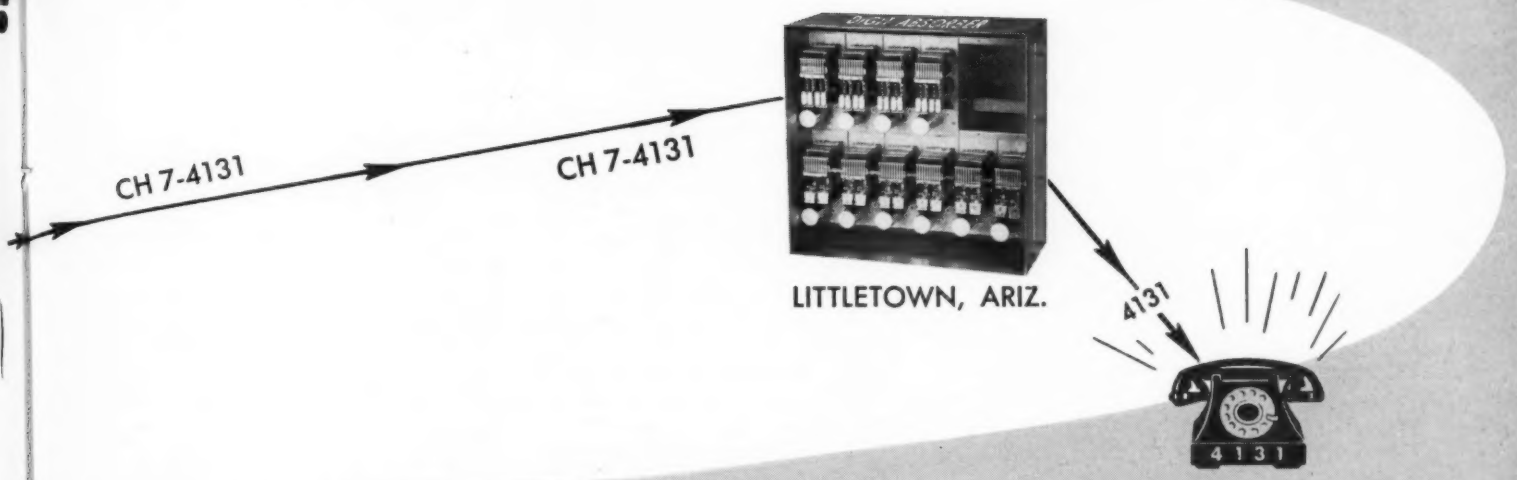
Typical Relay Case for Digit Absorber.

The Universal Digit Absorber employs simple circuity with a magnetic impulse counter, together with other standard relay apparatus of recognized manufacture.

Other UNIVERSAL Telephone Equipment:
Code-to-Selective RINGING CONVERTER
COMPUTER INTERCEPT

INDEPENDENT

It can with a UNIVERSAL DIGIT ABSORBER*



DIRECT DISTANCE DIALING REQUIRES A 2-5 CODE

The nationwide dialing plans for operator and direct distance dialing require that all stations be recognized by a 2-5 code. Few dial switchboards of earlier design have provisions for adding digit absorbing features economically. The Universal Digit Absorber fills this need easily and at nominal cost. Installation requires very little time.

The ever-increasing requirements of Extended Scope Dialing on a universal numbering arrangement are easily handled by the Universal Digit Absorber. The Digit Absorber is a factory assembled, fully-wired, applique unit that can be added to any existing dial switchboard to pad in three digits of exchange code (ABX) or four digits in the case of a small digit dial unit.

There are two types of Universal Digit Absorbers, depending on the complexity of the exchange codes assigned:

*19-S unit will handle exchange codes, as illustrated by AB-X, where the "X" digit is not a duplicate of the "A" or "B" digit.

*19-L unit is required where the "X" digit is a repeat of either the "A" or "B" digit.

In addition, Universal offers a Trunk Digit Register unit which can be applied to "Trunk on Line" dial units where five or more digits are required to be delivered to a 3 or a 4 digit tributary exchange.

TELEPHONE DIVISION

UNIVERSAL
CONTROLS CORPORATION
OFFICE AND PLANT – CARROLLTON, TEXAS
MAIL ADDRESS – P. O. BOX 13122, DALLAS 20, TEXAS

KELLOGG
A DIVISION OF I T & T
6650 S. CICERO, CHICAGO 38, ILLINOIS

*Pat. Pend.

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4501 TRUMAN ROAD KANSAS CITY 1, MO.
1555 WEST FOURTH STREET MANSFIELD, OHIO
23 BRODERICK ROAD BURLINGAME, CALIF.
1594 SOUTHLAND CIRCLE, N. W. ATLANTA, GA.
6100 EXCELSIOR BLVD. MINNEAPOLIS 16, MINN.
165 PROSPECT STREET PASSAIC, N. J.

Mail this coupon to the nearest address.

Gentlemen: I am interested in your Universal *Digit Absorber* for 2-5 Numbering.

Name_____

Position_____

Firm_____

Address_____

City_____ State_____

T-11-23

the rural home is the housewife. Her family made an average of one to three calls a day. Telephone service is considered important in emergencies, but the actual usage consisted of calls placed for farm or business reasons, family business, and for social calls.

Only one rural subscriber in five is served by a manual office, and the average rural customer shares his line with six or seven other parties. Only one in 20 rural customers has extension telephones. It was found that the farm group indicated considerable interest in extension telephones. Many of these extensions, it was indicated, would be located in farm buildings other than the home.

A large percentage of rural customers expressed willingness to pay for upgrading service. Others also were interested in inter-communication systems, color telephones, loud-ringing bells, etc.

In 1945, the Michigan Bell had over 82,000 telephones in rural areas. Today, it has approximately 140,000. Of the present total, 20,000 are of the urban type service with one-, two-, and four-party service. More than 62,000 rural telephones have been reclassified as urban in the last 12 years.

•

We have a letter from our old friend, J. D. Stewart, district engineer-central, for the Southern Bell Telephone & Telegraph Co. at Birmingham, Ala. Jimmie's letter states in part as follows:

"As usual, once a week I read your article in TELEPHONY and recently came across the picture of you standing beside the Model T Ford. The point I can't understand is how you could have done much telephone work back in those days dressed up like a city banker.

"When I saw your picture, it reminded me of a trip I made in 1919 at the age of 14 from Louisville, Ky., to Florence, Ala., driving a Model T Ford coupe. It took two days to make the 350 miles, but that was quite a trip in those days."

To enlighten Jimmie, I was not so dressed up as it appeared in that picture. Anyway, I was a wire chief and the Company insisted that I present a neat appearance at all times. And I could afford it, too, for I remember well that my salary at that time amounted to the grand sum of $60 a month.

•

The records tell us that back in 1885 each American's average share of federal taxes was $1.98. Today, you can't even get anyone to help you fill out your tax return for several times that amount.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. We note that the fuseless station protector is coming into general use in many localities. Is it true that this type of protector may provide a hazard to property and to personnel working on lines so equipped?

A. One authority claims that the fuseless protector is usually considered more safe than the fuse type for the following reasons: First, when a foreign high voltage is placed on a drop wire which is connected to a fused-type station protector, the fuse opens. In most cases, this leaves the drop wire at a high potential.

In some cases, the protector cover may be raised to a high potential also. In any case, the drop wire and the binding posts on the protector are a hazard, and it is possible for workmen who come in contact with them to suffer serious injury.

With the fuseless protector the drop wire is grounded upon contact with foreign high voltage and current, and with suitable ground connections, this voltage will be held to a safe value.

When the fuseless protector is used, the probability of damage to the subscriber's property is considerably reduced. When high voltage comes in contact with wires connected to a fused protector, often after the fuses are blown, the wire may burn the side of the house.

When the fuseless type station protector is used, if this current persists, the drop wire or cable conductors will most likely burn off.

In general, the damage to the telephone company's property will be less when the fuseless protector is used. With the fuse-type station protector, the fuse opens if the high voltage and current remain on it for any appreciable length of time.

This voltage will also remain on the cable to the fault and may possibly remain on the plant for a considerable length of time. The longer this abnormal voltage and current remain on the telephone plant, the greater will be the possibility of damage.

When the fuseless type protector is used, the subscriber's drop wire is immediately grounded by the heavy fault current. The combination of numerous fuseless station protectors draining off this heavy current will open power company circuit breakers and remove the fault. Thus, the damage to the telephone plant will be reduced as the time required to remove the damaging current is considerably lessened.

Multiple drainage is not provided with fused protectors when the fuses open the circuit.

•

Q. For some time we have contemplated the purchase of a recorder-announcer for use on our dial system, but it is understood that this equipment is rather difficult and expensive to maintain. Can you give us any information on this subject?

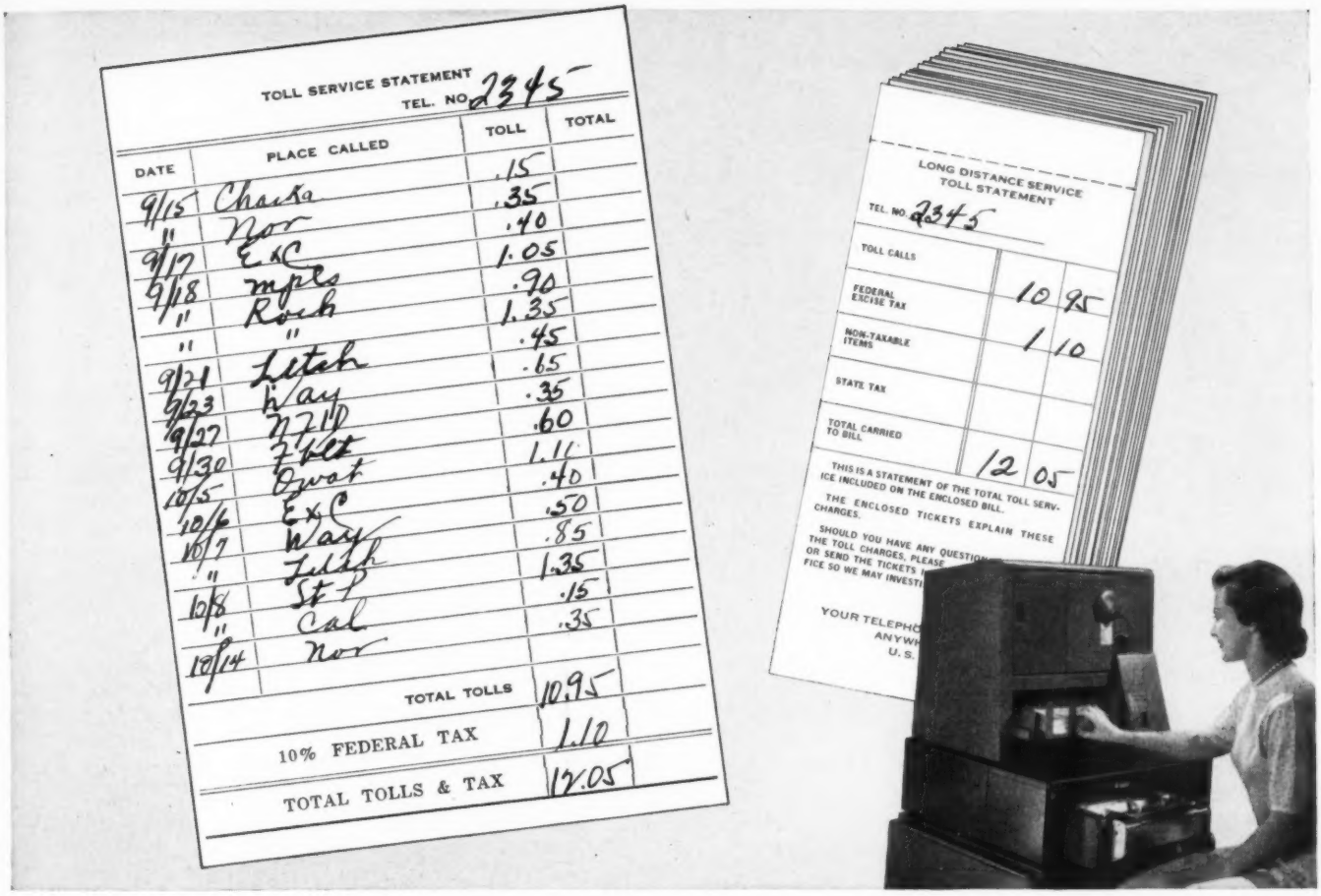
A. These announcers are in service in large numbers, and we have never known of them causing any maintenance difficulty.

One type with which we are fairly familiar uses magneto recording which provides smooth sounding messages free from annoying "breaks" or changes of pitch. There are no photoelectric cells or phonograph discs to cause trouble, and since the recording and playback equipment is compact and self-contained, no separate processing facilities are required.

An iron-oxide-impregnated recording tape, 1⅝ inches wide and ⅛ inch thick, fixed to the rim of an aluminum drum, carries the message.

There is no appreciable wear because nothing but the pickup head touches it. The same head establishes the sound channel at the time of recording, so there's no problem of alignment.

Operating current consumption is very low, even when the announcers are run continuously, and maintenance is normally required only a few times a year. If repairs should ever be needed, a qualified carrier or radio serviceman can do the job with the equipment he normally carries in his stock.



ONE LOOK AT THESE TWO BILLS SHOWS WHY

this Recordak Billing System cuts billing costs 45% or more!

ON THE LEFT, the old-style bill, full of time-consuming details . . . tedious to prepare. On the right, the *simple* bill used in the Recordak System. So easy for your billing clerks to post—actually requires 85% fewer entries! Virtually halves your billing costs!

Here's how the Recordak System works—You add up all toll charges . . . enter this total and tax on bill . . . then microfilm *bill and toll tickets* . . . clip them all together and send on to customer!

In one stroke, you've eliminated hours of transcription work . . . enabled each clerk to handle four times as many accounts . . . reduced the chance for error to strictest minimum. And you have a film record that's complete . . . easy to check . . . easy to file!

What's important, too, this Recordak System improves customer relations. Folks like to get the actual toll tickets. Having all the details makes it easier to remember calls! Questions are answered before they come up!

More than 300 telephone companies are now using this Recordak System. All you need is a Recordak Microfilmer which sells for as little as $550; also available on a low-cost rental basis. Write today for detailed information and copies of actual case histories. Price quoted subject to change without notice.

RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming—
now in its 30th year

MAIL COUPON TODAY

RECORDAK CORPORATION
415 Madison Avenue, New York 17, New York

Gentlemen: Please send folder describing Recordak Toll Billing System in detail. CC-11

Name_____

Position_____

Company_____

Street_____

City_____ State_____

DEPARTMENT OF TECHNOLOGY
BUFFALO AND ERIE COUNTY PUBLIC LIBRARY

Some of the Do's and Don'ts Which Spell Business Courtesy

By WILLIAM J. MILFORD

"WHY IS BUSINESS courtesy so rare today?" a telephone company executive has asked TELEPHONY in a letter, and cites an example.

"Day after day there come to my desk inquiries from other companies regarding toll tickets and uncollected accounts," he explains. "It is only one in a hundred who ever extends the business courtesy of enclosing a self-stamped and addressed envelope.

"To my way of thinking, if it isn't worth a self-stamped and addressed envelope for that information, it isn't worth my time and effort to obtain the information. When I find one who has the courtesy to extend that 'courtesy' to me, I will put myself out to obtain all the information possible."

It is so easy, in the midst of hurry and routine, to let courtesy slip out of our way of doing things. Before we know what has happened, neglect has created unfortunate and unnecessary situations.

Not only every telephone company executive but most employes can well use a review of business courtesies from time to time—keeping handy a check list of the more important ones and referring to it from time to time to make sure we have not "slipped" in this regard.

From the suggestions of the foregoing executive, as well as a number of other telephone men, we have compiled a list of business courtesies. All represent the little acts on our part which not only lead to more pleasant business relations but insure maximum cooperation from others—our customers, the people in our own company and those in other organizations.

Use self-addressed, stamped envelopes when sending a request for information or data, particularly if answering the request requires considerable effort on the part of the other fellow. This is most important where we are requesting something for which the other person will receive no direct compensation. Respect the value of his time, and don't ask him to do something without charge which takes up a great deal of time and effort.

Avoid wasting the time of individuals and firms with "curiosity" inquiries—keep it strictly limited to business inquiries. Too often requests are made which have little bearing on direct business.

Reply promptly or act promptly upon requests. A decision of "there's no hurry on this, it can wait," is careless discourtesy, for we can never be the judge of whether or not promptness is important insofar as the other person is concerned. It's just plain good business courtesy to grant the promptness to others which we expect ourselves in all business matters.

Business exists solely when it makes a profit on what it does—it's very poor business courtesy to ask for or expect something free which the other company normally is paid to do. This is one of the most abused of all business courtesies between executives.

Be as clear and definite as you can when answering requests for information from others, for an evasive reply is valueless. Sometimes caution from the legal angle makes such a reply proper, but this has little application to the ordinary routines of business.

When the occasion arises where one cannot grant an immediate telephone or letter request, this should be frankly stated so that the other person can make other arrangements. It is "infuriating" to be stalled, and then ultimately given no satisfaction whatsoever.

Take the time to be friendly. Gruff, sharp attitudes may be all right in a company of Marine recruits but they have little place in business. Friendliness is a top business courtesy which sets off the successful business executive and business from the run-of-the-mill.

Avoid pulling the "emergency" lever unless you really mean it. It is exasperating to rush material to meet a deadline and then find out that no genuine "emergency" ever existed. Chances are we will receive little if any cooperation again after exhibiting this business discourtesy just once.

Let the other person know who you are. Have you ever wanted to make a personal contact immediately after receiving a letter, but been unable to make out the signature? Naturally you didn't make the contact and probably the other person lost some valuable business because he had an unreadable signature.

"When you make a promise in business—keep it!" suggests one executive friend of ours as a most important business courtesy. He points out that any definite commitment should be followed up as promised, or not made in the first place. Other people expect us to come through on our promises.

When writing notes or letters seeking data or information be sure to supply all of the facts. "Send us a widget for our grosmo machine," is the kind of request that not only fails to secure the "widget" for us immediately but causes high blood pressure elsewhere. If the model number of the machine and necessary details are given in the first communication, this eliminates the need for time-consuming follow-up correspondence.

When you "borrow," pay back immediately. This includes everything from office machines to technical books. This is always a mark of good business courtesy.

Make it easy for the other person to supply information. Have printed forms made up if you make many such requests. It's a lot easier for someone to fill in a form than to sit down and write a letter. This also assures obtaining just the information required.

305 RAMAC*

makes toll rating automatic for direct distance dialing

With its 5-million-character disk "memory" that files and finds facts at random, the 305 RAMAC® makes automatic rating of tolls *in random sequence* a reality!

It also handles rate settlement, toll study data, and other vital traffic statistics *automatically* . . . at the same time the toll rating is being done.

Get the full IBM 305 RAMAC story now. Just phone your local IBM representative. Or write: COMMUNICATIONS DEPARTMENT A57-b, International Business Machines Corporation, 590 Madison Avenue, New York 22, New York.

*Random Access Method of Accounting and Control

DATA PROCESSING
ELECTRIC TYPEWRITERS
TIME EQUIPMENT
MILITARY PRODUCTS

60 1897-1957 *Years of Independent Telephony*

IBM DATA PROCESSING

IT'S FUN TO 'PHONE AT ANY AGE

Meet a flock of happy people. Young and old, they're all telephone users. You'll be seeing them in an advertisement called "Seven Ages of the Telephone" which is running this month in national magazines.

People know how wonderfully the telephone helps them get things done. But over and above its utilitarian value is its ability to make life happier, friendlier and more rewarding. The more we can get people to realize this, the more valuable the telephone becomes to them. And the brighter are prospects for the telephone industry.

Working together to bring people together

BELL TELEPHONE SYSTEM

XUM

construction and maintenance DIGEST

- **Ambidextrous terminal**
- **Insure your power**
- **Wire saves poles**
- **Wires' Shangri-la**
- **Light and dry**

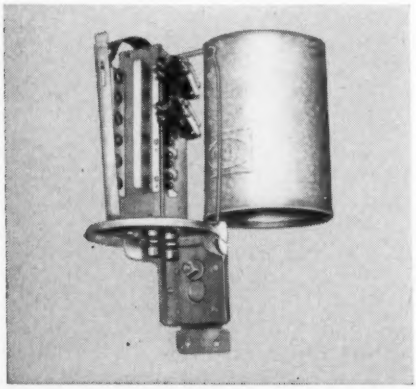
Published regularly to help you get the most out of your materials and supplies dollar

by Joseph W. Mullin, Inside Sales—Kansas City

My pet hobby is photography. Maybe you've noticed yourself—a double exposure can be mighty interesting. For instance, when you order supplies from Stromberg-Carlson you see **two** big benefits in the picture. One, you get fine products with a two-fold guarantee—ours and the maker's. The guarantee is backed by our 62-year reputation. And here's the other. Your support gives the science of telephony a push forward. As you know, this industry is a full-time job with us. Your supply orders help us continue research for new and better telephone equipment. So we say a heartfelt "thanks"—it's a pleasure to serve your supply needs.

Versatile terminal for plastic cable installations

If you're installing plastic cable, you'll want the S-20V pole cable terminal, with its two cable entrances, each of which is arranged to accommodate compression couplings ranging from 6 pair to 51 pair in size.



Easy accessibility of this pole cable terminal interior makes it ideal for use with plastic cable.

When only one cable entrance is required, you close the other entrance with a standard pipe plug. These features, combined with the flexibility of Cook Electric Company's H-20 protector units, make the S-20V protected pole cable terminal probably the most versatile pole cable terminal available.

Insure your power supply

Because Planté batteries practically last forever... providing stand-by power that never fails... they're the best operating insurance you can buy. In switchgear, signal and alarm systems, or emergency light and power applications, these lead batteries have rolled up amazing performance records . . . are famous for their ability to deliver a powerful surge or a steady flow of current the instant it's needed. Make sure you're in operation . . . always. Choose Gould Planté.

A sure, dependable supply of power when you need it. That, briefly, is the story of this Gould Planté battery.

Ask your Stromberg-Carlson representative about long-life stand-by power with Gould Planté.

Save 10-15 poles per mile

A net saving of 10 to 15 or more pole structures per mile is possible where **Crapo** High-Tensile Telephone Line Wire is used in long-span construction. Fewer pole structures mean substantial savings in time, labor and material, and in maintenance.

Crapo HTL-135 makes possible spans of 350 feet in heavy, 450 feet in medium, and 500 feet in light loading areas. Its practical economy should be considered for new extensions and where old lines are to be replaced.

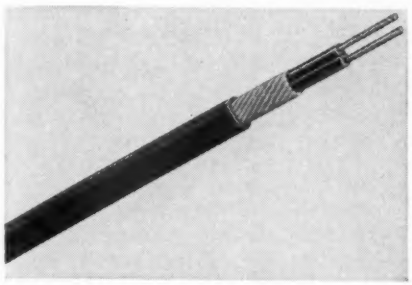
Crapo HTL-85 (No. 12 B. W. G.) permits spans of 225 feet in heavy, 325 feet in medium, and 375 feet in light loading districts; provides stronger spans on existing pole structures. Both wires possess superior telephonic transmission qualities.

Here's a drop wire that hides its age

Samples of Whitney Blake Teleprene® (neoprene jacketed) drop wires were strung where they would get lots of weather. After nine years, they still looked fresh and undaunted – and tests showed that these wires would give years and years **more** of good service!

The jacket is a tire-tread type neoprene compound which provides excellent resistance to sunlight, abrasion, oils, acid fumes, alkalies and other corrosive chemicals.

Conductors have Teleplate coating: lead, to resist corrosion, and brass plating over the lead, to provide enduring adherence of the



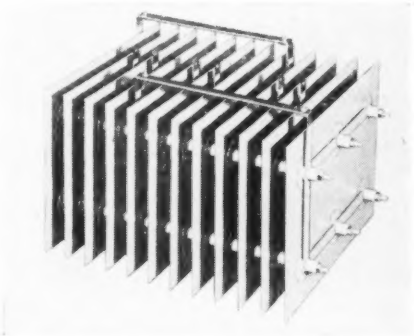
Available in parallel (shown here), twin parallel and twisted pair types.

high quality buna rubber insulation to the conductor.

New, Dry CEMF Cells Eliminate Battery Maintenance

If you've been using liquid-filled counter EMF cells, you know what a problem they can be.

In a busy exchange these cells need frequent maintenance, and the job is apt to be unpleasant and time-consuming.



Lightweight dry CEMF cells bring freedom from maintenance

Now Lorain Products Corporation solves this problem with *new, dry* CEMF cells, which require no maintenance at all. In addition, they're light in weight, portable, safe, and completely flexible as to voltage and current ratings.

Freedom from maintenance means new economy, too.

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STROMBERG-CARLSON

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WHAT LIES AHEAD IN OUR INDUSTRY

Concluded from page 38

(2) *Electronic switching systems.* We have heard a lot about electronic switching in recent years but the end result must achieve certain basic requirements such as compatibility with present systems, reduction in space requirements and reduction in first costs to the point that unit replacements become practicable in lieu of highly skilled technical maintenance effort.

(3) *Concentrators.* The development of this type of equipment on a miniaturized basis should not only offer means of providing relief to cable plant on a temporary basis, but if found applicable on a permanent basis should materially aid in bringing down investment in local exchange plant.

(4) *The application of carrier techniques to subscriber loops as well as to inter-office trunks.* This should open the field for the economical upgrading of party line service for we should have a short-term objective of eliminating party line service. This approach could be even carried further to offer a second individual line to residence subscribers at a reduced cost over the first line as a means of reducing "busies." This latter feature would have major benefits in connection with direct distance dialing (DDD).

(5) *Redesign of local plant distribution to provide high frequency channels as an economical means of furnishing many specialized services.* This appears to have many applications, not only in the field of wired TV for entertainment, industrial and educational purposes, but also in the very extensive field of transmission of processing data and facsimile.

(6) *Redesign of subscriber equipment and signaling with a view to adding convenience for the customer in the progressively more cumbersome dialing requirements under long distance dialing.*

I have briefly highlighted potential fields for cost reduction as a means of rendering broader communication services. Let us consider for a moment the urgency for early action in these fields.

If we can accept as reliable the forecasts as to population growth, changes in living habits, and industrial development, we must meet adequately the communication needs of such an expanding economy or we will run the risk of other entities entering the field to the detriment of the entire industry.

The extent of the postwar development of internal long distance services rendered by major pipe line companies and the like is an indication of what this trend can do to us if we don't meet this challenge and act before it is too late.

Small Companies Affected

The small operator should be just as interested in these developments as the larger ones and should do his share of merchandising in its broadest sense as his contribution toward solving these problems.

Active membership in the USITA is one indication of your willingness to participate for we should look to USITA committee efforts to lend impetus to what has been discussed in this presentation. Broad base representation in the USITA and in the several committees is one way of speeding up progress and every one of even the smallest operators can help in this respect.

May I ask you to think about these things and reflect upon what you and your company can do by looking into the future in an effort to protect your position in our industry, as a necessary part of maintaining the position of the Independents in the communication industry.

REA to Demonstrate Dial Operated Radio-Telephone

A demonstration of dial-operated radio-telephone equipment will be conducted by the Rural Electrification Administration Dec. 12 and 13 on the system of the North Florida Telephone Co., Live Oak, Fla.

The equipment, developed by the Automatic Electric Co. to meet REA specifications, has been field-tested by the Florida system since its installation last July.

The initial event will be an 8 p.m. meeting Dec. 12, at which time discussion will center on broad operating requirements necessary for adapting radio-telephone for unattended dial service, and the manner in which the equipment to be demonstrated meets service requirements. The following day will be devoted to inspecting the installation and observing the equipment in actual use.

Persons planning to attend the demonstration are urged to contact Charles Fawcett of the North Florida Telephone Co. as soon as possible in order that arrangements can be made for reservations and meeting place.

Feeding the Intellect

"Cultivation is as necessary to the mind as food is to the body."—CICERO.

It's a pleasure to use good tools —pliers that grip tight . . . that cut through tough wire easily . . . that reach confined spaces.

Linemen and electricians know that they can rely on their Kleins—side cutters, long nose, oblique cutters—famous for quality for a century.

There is a Klein Plier exactly suited to every electrical need—carried in stock by better electrical suppliers everywhere.

100 years of service to linemen, electricians and industry is back of this new Pocket Tool Guide No. 100. A copy will be sent to you on request, without obligation.

Mathias KLEIN & Sons
Established 1857 Chicago, Ill., U.S.A.
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Commercial Signaling Group Selected by BDSA

The selection of a Task Group from the commercial signaling industry to assist in determining the most critical signaling facilities relating to defense was announced Nov. 1 by the Business & Defense Services Administration of the U. S. Department of Commerce. The members of the Task Group are:

James G. Healey, Holmes Electric Protective Co., New York, N. Y.
Carl G. Eicker, American District Telegraph Co., New York, N. Y.
F. E. Guibert, Newark District Telegraph Co., Newark, N. J.
Sidney Stackler, Central Watch Service Co., Chicago, Ill.

This Task Group was selected at the recent meeting of the Commercial Central Station Protective Signaling Industry Advisory Committee with BDSA officials. At this meeting problems of maintaining critical central station equipment and services under full mobilization conditions were discussed.

A government spokesman told the advisory group that in view of the possibility of nuclear attack upon the mainland of the United States it is highly important that operators rendering essential service adopt the best plans to meet such an eventuality.

The majority of industry representatives present acknowledged the need of making plans for continuity of service and management under attack conditions. Several are amending company or corporate bylaws to assure management continuity for orderly control of operations in emergency.

Other preparations which have been made by some of the operators include establishment of rendezvous points for company management, and of alternate banking and record-keeping facilities at points remote from central stations.

The committee was also informed that the Communications Division is undertaking a study and analysis of their operating facilities to determine which of their facilities are important to national defense under mobilization conditions.

Alexander J. Falk, acting director of the BDSA Communications Division, presided at the meeting. The following industry representatives were present:

Henry G. Clark, Rhode Island Electric Protective Co., Providence, R. I.

Burt L. Davis, Pacific Fire Extinguisher Co., San Francisco, Calif.

Thomas P. Drew, Automatic Fire Alarm Co., New York, N. Y.

James W. Flotron, Jr., Potter Electric Signal & Mfg. Co., St. Louis, Mo.

Edward F. Gaston, American District Telegraph Co., New York, N. Y.

Francois E. Guibert, Newark District Telegraph Co., Newark, N. J.

William J. Kleinknecht, American District Telegraph Co., New York, N. Y.

James A. MacDonald, Bankers Electric Protective Assoc., New York, N. Y.

Maurice G. Sondock, McCane & Sondock Detective Agency & Burglar Alarm Co., Houston, Tex.

Sidney Stackler, Central Watch Service, Chicago, Ill.

Henry C. Ward, Homes Electric Protective Co., New York, N. Y.

King Young, American District Telegraph Co. (Ind.), New York, N. Y.

The Illinois Telephone Association during September held four Plant Clinics, at Kewanee, Jacksonville, Mattoon and Mt. Vernon, Ill. (meeting at Mt. Vernon shown above). The morning sessions were outdoors and consisted of actual demonstrations of plowing in buried cable and wire. The Barber-Green Co., manufacturers of trenchers, furnished a trencher for demonstration. This was followed by the placing of aerial cable, both support and non-support, including splicing and installation of terminals. The afternoon session consisted of electrical hazard demonstration, installation of station apparatus and use of testing equipment. A total of 337, representing 89 telephone companies, attended the four clinics.

OTHERS FOR TAX REPEAL

Concluded from page 17

(4) An excise tax on telephone communication is discriminatory since it singles out the telephone from other essential household utility services like water, gas, and electricity.

(5) The telephone excise tax was enacted primarily to assist in conserving critical materials during the war. It was an emergency measure and should not be permitted to become a permanent part of tax revenues.

(6) The telephone excise tax is a consumer tax. Its repeal would result in a direct saving for the telephone user. No part of the tax saving could be retained by the telephone companies.

If the excise taxes are ever to be repealed it is imperative that all telephone people go into immediate action against the taxes at the local level and also assist those outside of the industry who are working for their repeal. It is this kind of "grass roots" action that makes the deepest impression upon our representatives in Washington.

TODAY is the time for action! Tomorrow could be too late.

TRAFFIC HANDBOOK

Concluded from page 34

Had the office been equipped for 100 per cent lockout, the reverting call switch requirement would be:

28.8 CCS × .15 = 4.32 CCS.

Again, the "Trunk Capacity Table" (Sub-table 10) shows a CCS of 4.32 will require two reverting call trunks or switches.

"Lockout," as referred to here, means that the reverting switch is locked out from the line after performing its function and is available for use on another reverting call. "Non-lockout" means the reverting switch remains on the connection until both parties hang up at the end of conversation.

(Section 6 will be continued next week)

Plea for Individuality

"We are in a period in which the individual is being increasingly looked upon only as a part of the environment. This is ironic because this comes at a time when man has the most control over his environment. We are in a period of reaction against individuality. We are in a period of stress upon socialization and equality, and we are getting mediocrity." — ROBERT J. BLAKELY, *vice president, Fund for Adult Education.*

MID-SPAN TRANSPOSITIONS...

easily, accurately and economically installed with Case aluminum span-point brackets

The Case span-point transposition bracket now makes it possible to transpose communication wires at any point of the line **between poles,** regardless of pole spacing ...eliminates the need for special transposition poles. This lightweight (only 3½ lbs. complete with insulators and bushings) non-corrosive, ruggedly designed bracket features insulators that roll thus protecting wire insulation in stringing and reducing installation time. It is the **only** bracket designed **especially** for mid-span transpositions.

All Case transposition brackets come equipped with a special rubber bushing... in the event of glass insulator breakage, the line wire falls on the rubber bushing, with no loss of communication service.

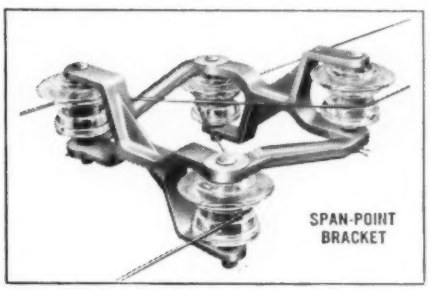
SOLD BY LEADING DISTRIBUTORS IN THE U. S.

CASE BRACKETS . . . STRONG, LONG-LASTING, ECONOMICAL, ESPECIALLY ADAPTED FOR CARRIER-CIRCUIT CONSTRUCTION

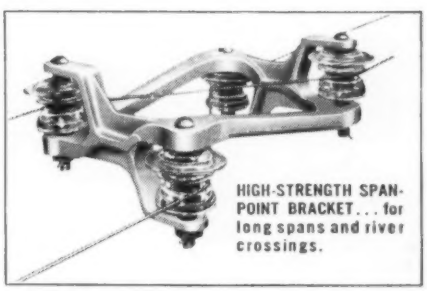
Write today for free illustrated brochure.

TRANSANDEAN ASSOCIATES, INC.

305 MAIN STREET, ORANGE, NEW JERSEY



SPAN-POINT BRACKET



HIGH-STRENGTH SPAN-POINT BRACKET... for long spans and river crossings.

charm – beauty – convenience

make the *Ericofon*® the choice of millions

Wherever the Ericofon has been shown, people have acclaimed its charm, beauty, convenience and light weight. At scores of public showings all over the country, thousands have praised the Ericofon and asked for it!

Now, full color advertising in Ladies Home Journal and House & Garden has shown the Ericofon to millions!

Already, the demand for Ericofons is being heard from coast to coast. Modern homemakers want this exciting new telephone—and you can supply it to them.

Ericofons, in all six colors, are available for immediate delivery from stock.

Order Ericofons now! Remember, the Ericofon is available only from—

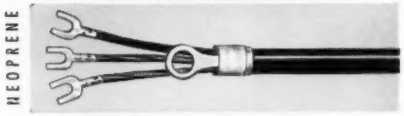
NORTH ELECTRIC COMPANY

601 SOUTH MARKET STREET • GALION, OHIO

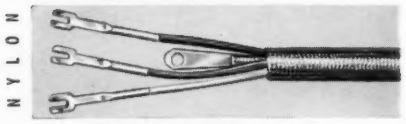
XUM

CORDS BY Runzel

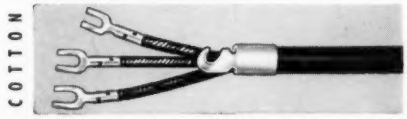
YOUR



BEST



BUY!



Are you familiar with the features of these fine cords?

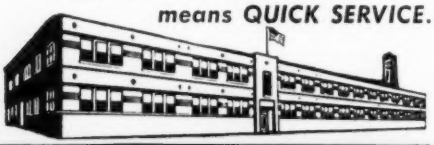
NEOPRENE covered cords are a highly serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

NYLON covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

COTTON cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

Our geographical location means QUICK SERVICE.



RUNZEL
Cord and Wire Co.
4723 W. MONTROSE AVE.
CHICAGO 41, ILL.

General of California Names Personnel Director

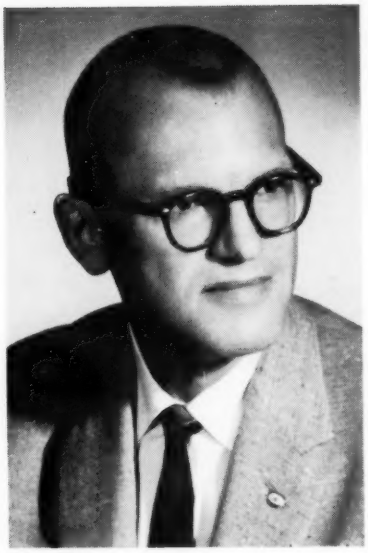
Carl Von Hake, formerly chief engineer of the General Telephone Co. of California, has been promoted recently to the position of director of personnel, according to an announcement by Edwin M. Blakeslee, company president. He replaces M. C. Strittmatter, who

CARL VON HAKE

leaves to assume a similar position with a construction firm in San Francisco.

The new chief engineer will be F. C. Rahdert, who previously held the position of general plant engineer, Mr. Blakeslee said.

Mr. Von Hake started his telephone career as an installer with the Santa Monica Bay Telephone Co. in 1923. He became district manager in the San Joaquin branch in 1938, commercial manager in Santa Monica in 1942, district manager in Pomona in 1947, outside plant superintendent in 1952, and chief engineer in 1953.



F. C. RAHDERT

A native of Anaconda, Mont., Mr. Von Hake attended grammar school and high school in Salt Lake City, Utah.

Fredrick C. Rahdert, born in Fort Wayne, Ind., received his elementary and high school training there. He later attended Indiana University. Mr. Rahdert began his career with General Telephone as an administrative clerk in the commercial department in 1947. Prior to his latest promotion, he held various positions in the company's main engineering department.

Outgoing personnel director, M. C. Strittmatter, had been head of the company's industrial relations department—now personnel department—since 1953, when he joined General Telephone of California.

1958 Convention Calendar

Association	*Date*	*City*	*Hotel*
Louisiana	Feb. 12 and 13	New Orleans	Jung
Minnesota	Feb. 17, 18 and 19	St. Paul	St. Paul
Texas	March 3 and 4	Dallas	Baker
Kentucky	March 4	Lexington	Phoenix
Iowa	April 8 and 9	Des Moines	Fort Des Moines
Ohio	April 14, 15 and 16	Columbus	Deshler-Hilton
Nebraska	April 22 and 23	Omaha	Paxton
Indiana	May 7 and 8	Indianapolis	Claypool
Wisconsin	May 14 and 15	(City and hotel unannounced)	
Illinois	May 21 and 22	Peoria	Pere Marquette
Kansas-Missouri*	May 26 and 27	Kansas City	Town House
Pennsylvania	May 26, 27 and 28	Bedford	Bedford Springs
Maine-New Hampshire-Vermont*	June 3, 4 and 5	Rockland, Maine	Samoset
California	June 4, 5 and 6	San Francisco	Sheraton-Palace
New York	June 16, 17 and 18	Schroon Lake	Scaroon Manor
Michigan	Sept. 9, 10 and 11	Grand Rapids	Pantlind
USITA Annual convention)	Oct. 13, 14 and 15	Chicago	Conrad Hilton
Virginia	Oct. 30 and 31	Roanoke	Roanoke

*Joint Convention

SMALL COMPANIES

Continued from page 27

treatment for the interior of the building.

Prefabricated concrete joists are available, but due to their weight when compared with those of metal construction, additional transportation costs are encountered unless the manufacturing plant is in the immediate locality.

Roof slabs can be secured which are constructed of various lightweight materials, some of which have added insulation properties and are designed to carry specific maximum loads. Some of them, such as metal slabs, can be used without the application of additional roof coatings. However, local conditions usually govern the type of construction used for the final roof covering, which will vary from the uncovered deck slab to a built-up job. Most roofing companies will apply a built-up bonded roof which they will guarantee against leakage for a period of 20 years. In many cases, this type of covering is not necessary. Many types of final roof coatings are available today, from aluminum, ideal for reflecting sun heat, to hard materials for protection purposes, the choice of which is usually made to coincide with conditions existing at the specific location.

Entrances to the building for both the general public and employes should, as far as possible, be designed with a minimum of outside steps, so as to enhance the appearance of the building as a whole.

Heating requirements are also governed by the geographic location and will vary considerably even in the same locality. Generally, as far as telephone companies are concerned, heating equipment, as far as possible, should be operated automatically.

Installation of air conditioning equipment might not be provided for in the present building plans, because of the additional cost involved, but since the life of the structure will cover a considerable period of years, the necessary space for air conditioning ducts should be provided at the time of construction in order to eliminate costly structural revisions in the future if air conditioning facilities are installed.

The conditions normally affecting electrical requirements are usually established by existing codes and ordinances, but proper specifications should be set up to cover the telephone equipment requirements. These should include sizes of wire sufficient to carry the present and future anticipated load.

Wire sizes throughout the structure should be installed in accordance with standard code practices even if the

Another dial conversion includes C & D Batteries

Lexington Telephone Co. installs latest equipment

Residents of Lexington are proud of this modern, new communication center.

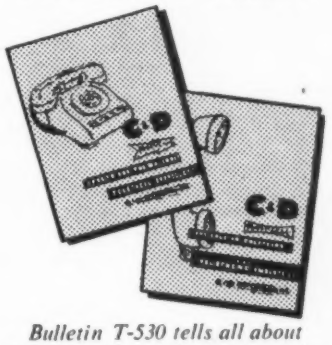
Here in the famous Blue Ridge country of Virginia, Lexington serves more than 6,000 subscribers. By its choice of C & D batteries, Lexington assured itself of:

1. Long battery life—due to extra thick, triple insulated plates.

2. Extra safety—because C & D's Saftee-Vent prevents accidental battery explosions.

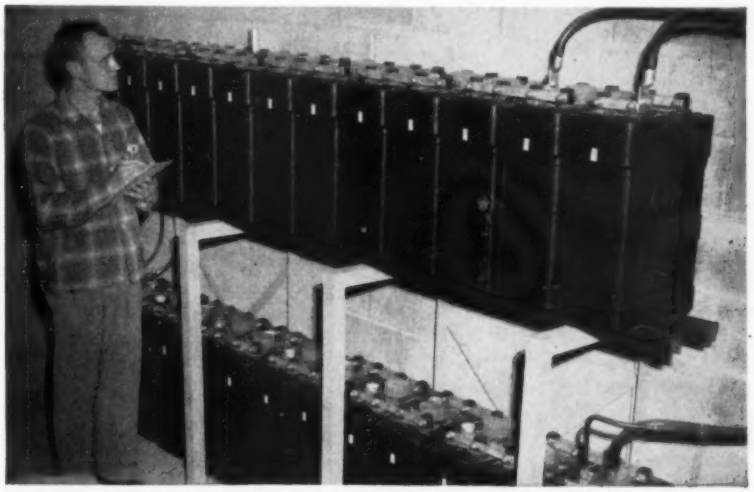
3. Easier maintenance—exclusive suspended and supported plate construction eliminates leaks due to internal stress.

Get complete details!



Bulletin T-530 tells all about PlastiCal (lead-calcium) batteries. Bulletin T-531 has the complete facts on C & D PlastiCell batteries.

Dependable power for the new XY dial system at the Lexington Telephone Co. is provided by a C&D 26 cell, Type CT-15 battery, rated at 840 Ampere Hours at the 8 Hour Rate.

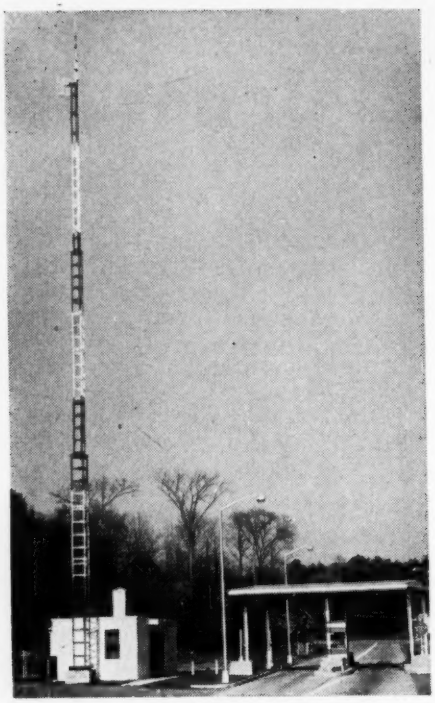


C&D BATTERIES, INC.

of Conshohocken, Pa.

SINCE 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST



Communication's Most Versatile Tower . . . the STAINLESS "SC" (Self-Supporting)

- Clean, economical, dependable structure
- Serves many purposes
- Space-saving uniform cross-section
- Easy to erect
- "Natural ladder" construction affords easy maintenance

Quick, expeditious handling of communications is assured year-'round by this clean, economical and dependable self-supporting structure.

The SC Tower is sturdy, and being free of guy cables is particularly adaptable where land space is at a premium.

Available as straight uniform cross-section for short heights, graduated uniform cross-sections for taller use.

Call or write for details.

Stainless, inc.
NORTH WALES • PENNSYLVANIA

code is not in effect at the building location. This procedure will not materially affect the cost of the electrical work and would eliminate future changes which could be required if standard code requirements were enforced in the future.

Landscaping of telephone buildings and surrounding property should be governed by local pattern and it may be a little more extensive than required in order to generate local pride in the telephone building. This also applies to the exterior design of the building itself, as a small additional capital investment would permit the incorporation of a design to present a pleasing appearance. Normally, an investor is interested in the earnings of a company although, should a future expansion program require additional funds, the appearance of a telephone building might help the investor to decide whether or not the company could be considered a going concern.

In all cases, whether the building is large or small, the contractor should be required to carry workman's compensation insurance, public liability and property damage insurance, along with a surety bond in an amount equal to the contract price. This bond will assure the faithful performance of the contract together with the payment of all persons supplying labor or furnishing material in connection with the job.

High Taxes Help Advance Socialization, Study Shows

Socialization of the United States will be inevitable if present tax trends continue, reports a Library of Congress study summarized in the September issue of *Nation's Business.*

The study shows the effects on individual rights and free enterprise of steadily growing federal invasion of political, social and economic activities in every state, territory, possession and in many nations overseas.

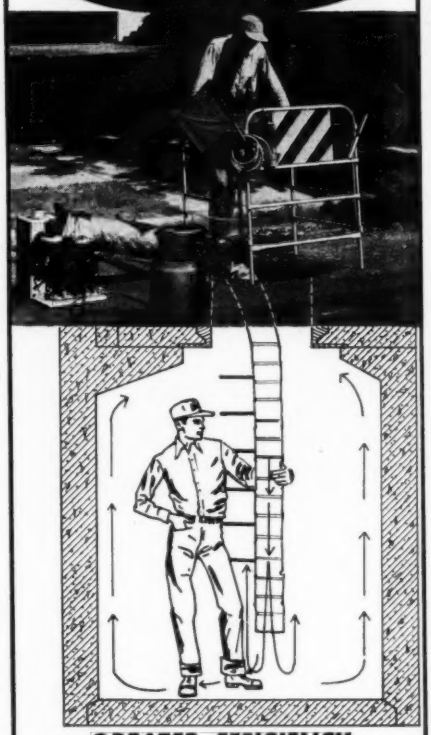
An acute problem to small business is the high taxation which has put brakes on incentives and the ability of individuals to save and invest, the study points out, noting that in the past decade federal tax collections have either approached or exceeded 20 per cent of the national income.

When state and local taxes were added to federal collections, the total exceeded an average of more than 29 per cent of the national income for the 1952-55 period, the study shows, and if the United States continues its rate of absorption of national product by taxes, we will reach 100 per cent socialization in the next century, it is asserted.

Ventilate and Heat Your Manholes with

Mo Pe Co

Ventilating Heaters



GREATER EFFICIENCY
INCREASED SAFETY
BETTER PRODUCTION

300 to 800 CFM fresh air in summer, heated fresh air in winter. 160 watt generator attached provides current for lighting manhole simultaneously.

MODEL PE-G
Portable, PE-G weighs 70 lbs.
Electric models also available.

Write for illustrated brochure on complete line of our products.

Select Distributorships Still Available

Morrison - Pelsue Co.

Dept. 8

2256 So. Delaware St.
Denver 23, Colorado

Behind this towering tax structure, the study makes clear, is a host of federal programs, which represent a considerable surrender of state, local and individual responsibilities to the national government.

These programs reveal varying degrees of federal intervention in agriculture, electric power, the lending of money, housing, welfare activities of state, local and private agencies, education, conservation and use of water, and include even the expenditure of American tax monies to subsidize the nationalization of industries in foreign countries.

A brief review of some of the federal activities analyzed by the study and their adverse effects on business follows:

Lending. The federal government now lends directly $1.00 for every $5.00 lent by private banks. Pressure to increase government lending is on the rise, the study showed.

Public Housing. A vast array of governmental machinery has been set up for this program, which includes some 490,000 public dwelling units. The theory is cheap housing for the lower income groups—a theory born in the depression. But private housing groups say they could do the job more cheaply.

Further, public housing advocates now are pleading for middle income housing. There is also reason to doubt that public housing has reduced slum growth or juvenile delinquency—another of the public housing theories, according to the study.

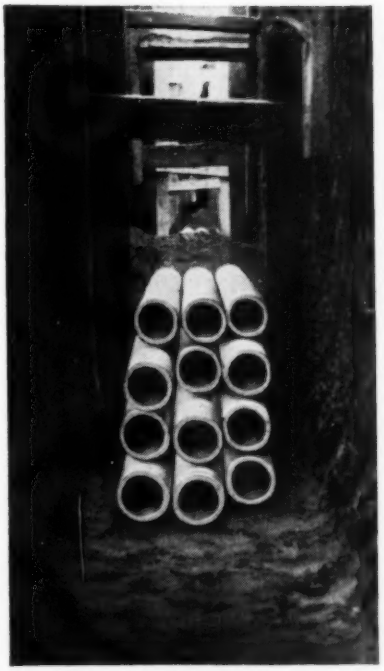
Agriculture. Despite the vigorous surplus disposal program, farm price supports have created surplus commodities which cost taxpayers a million dollars per day for storage. Total cost of federal farm programs—which Secretary of Agriculture Benson admits have been a failure—has been nearly 10 billion dollars in the period 1932-1955. In 1955, farmers lost at least 2 billion dollars because of the depressing influence of crop surpluses on prices. Consumers, too, are hurt. They must pay higher food bills because of government intervention in agriculture, which amounts to an uneconomic system of price-fixing, the study concluded.

Secretary Benson sums up the issue: Is agriculture to manage its own affairs; or is it to be managed from Washington?

Education. Constant agitation for more federal aid to education, including the many bills for federal aid to public school construction, may well have retarded state legislation. Yet many road-blocks to better schools could be removed by state and local governments. Some states, for example,

Long, lightweight lengths of Transite Conduit with new J-M Plastic Coupling ready for far west telephone installation.

...makes **Transite Ducts** cost far less to install



Transite Conduit with new J-M Plastic Coupling are installed in direct contact, saving trenching time and backfilling.

This unique plastic coupling, developed by Johns-Manville especially for telephone service, enables you to install Transite® Conduit at greatly reduced cost. It provides the following advantages:

1. **No separation between ducts**
2. **One backfill instead of several**
3. **Narrower, shallower trench**
4. **Faster installation**
5. **Watertight, silt-tight joints**
6. **No joint sealer**

Furthermore, the tight joints formed by this J-M Plastic Coupling enable you to use pneumatic rodding instead of expensive hand rodding—and eliminate cleaning.

Major telephone companies find that Transite Ducts provide better cable protection at lower cost. Made of asbestos-cement, they can't rust, are immune to electrolysis, resist corrosion and all normal soil stresses. The light 10-foot lengths are easy to install . . . reduce the number of joints in the line.

For more information, call your nearest J-M District Sales Office or write Johns-Manville, Box 14, New York 16, New York. In Canada, Port Credit, Ontario.

Johns-Manville

TRANSITE DUCTS

MADE OF ASBESTOS

have not given enough aid to local school districts, allowing these districts to continue depending mainly upon the local property tax to finance schools.

While there are, of course, differences in wealth among the states and communities, it has never been proved that these differences would prohibit adequate state and local support for schools, stated the study.

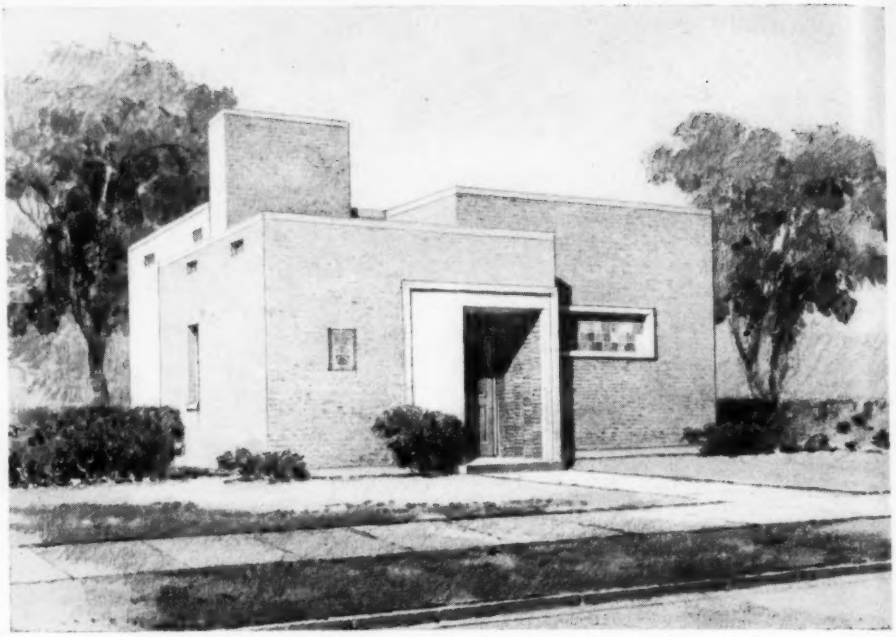
Reprints of the *Nation's Business* summary may be obtained at 20 cents each from *Nation's Business*, Washington 6, D. C.

Telephone Strike Stimulates Imaginative Advertising

A new approach in advertising—conceived by Illinois Bell Telephone Co. to explain service conditions during a recent strike against the company—has drawn complimentary attention from advertising people. An article appearing in *Bakers Dozen*, house organ of Lynn Baker, Inc., advertising agency, made the following comment:

"DON'T GET MAD: WE'RE NOT!

"About a month ago a young man placed a long distance call to his girl friend in Chicago. He hung up in a rage when he heard a man's voice on the telephone, thinking there was a man in the young lady's apartment.



Another design for a smaller central office building is this one to be erected by the Ohio Consolidated Telephone Co. at Brilliant, O. The one-story brick and limestone building will house new automatic switching equipment.

"But it was simply a male executive of the telephone company, manning a switchboard during a strike of operating employes.

"We were in Chicago recently, while the strike was still on. We noticed an ad in the *Sun-Times*, with the disarming headline: 'While Western Electric Pickets March, Try Our Long Distance Service. It Will Get You There (usually fast, sometimes slow—often an experience!)'

"The body copy was in the same vein: 'The message must go through, even though it may take a little longer. . . . Miss Voice-with-a-Smile will be

NOW YOU CAN BUZZ THROUGH WET CABLE SECTIONS AND NOT HAVE TO TEST FROM FIELD AND OFFICE ENDS

MURPHY BUZZER RELAY SET (BR-1)

To increase the usefulness of the famous Murphy Cable Tester, the new Buzzer Relay Set gives you a dependable, economical way of "buzzing thru" wet cable sections over a greater resistance without having to add too many batteries.

The BR-1 will buzz thru a loop resistance of 0 to 1000 ohms. Only one 4½ volt battery is used in the set and it is enclosed in a cabinet with a special "balanced armature" relay. Dimensions of the Murphy Buzzer Relay Set are 3½x6x3 inches. It is shipped complete with a pair of water proof cords for connecting to the Murphy Cable Tester, and a heavy duty 4½ volt battery.

Write for prices and additional information.

Order your new Model VC Test Cords for use with Murphy Cable Tester. Made of high quality, extremely flexible, test wire, they're insulation tested at 20,000 volts . . . assure no "leakage" readings.

MURPHY ELECTRONIC RESEARCH DEVELOPMENT MANUFACTURE
ENGINEERING LABORATORIES, Inc.
4419 Tulsa • Houston 24, Texas

Tomorrow's Standard TODAY!

SUPERIOR telephone CABLE

Now fully color-coded to the ultimate standard of the industry!

The big change in SUPERIOR CABLE today is color-coding . . . not in the cable itself.

Superior continues to manufacture better engineered, quality-tested Alpeth-type cables with either spiral or longitudinal shielding . . . but *NOW* they're fully color-coded to the standard the industry wants!

Polyethylene-insulated copper conductors, all standard gauges, polyethylene jacketed, up to 909 pairs. Available with 5 mil spiral or 8 mil longitudinal aluminum shield. Corrugated shielding soon. Double sheathed Alpeth-type Superior Cable is manufactured for direct burial use.

Order Superior's Alpeth-type cables . . . Now fully color-coded to the ultimate standard of the industry.

For detailed specifications, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION • Hickory, North Carolina

back soon, and she'll be welcomed. In the meantime "her" voice may be down in the bass register. Don't let a gravel voice mislead you—our emergency operators are just as eager to put you in touch as the famed original. Try them. Service gets better every day.'

"This ad of the Illinois Bell Telephone Co. concluded with some suggestions for using long distance during the emergency, and the line: 'Temporary slogan: Nothing Faster—Even when it's slow.'

"Congratulations to the telephone company. We are sure it wasn't easy to decide on that good-natured ad.

"Tempers are frayed during a strike, and we are all accustomed to strike advertisements placed by both management and labor which drip with bitter invective.

"This was a refreshing change. And a stroke of good business.

"The telephone company takes the long view. Strikes always come to an end. Remember that remark that Miss Voice-with-a-Smile will be welcomed back."

Another story taking favorable note of the Illinois Bell public relations-advertising effort appeared in *Advertising Age*.

Pennsylvania Independent Announces Promotions

John K. Stoltzfus, president of the Conestoga Telephone & Telegraph Co., Birdsboro, Pa., on Oct. 29 announced the following personnel changes:

Alvin C. Glick, Morgantown, veteran of 23 years with the company, was advanced from the post of plant manager to general manager.

Alvin W. Sponagle, Birdsboro, was appointed first vice president, and Amos Hartz of Morgantown, second vice president.

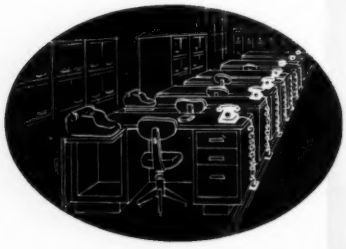
Floyd Kulp of Sinking Spring, was promoted to plant manager, and Willard Kline, Reading, was designated equipment engineer.

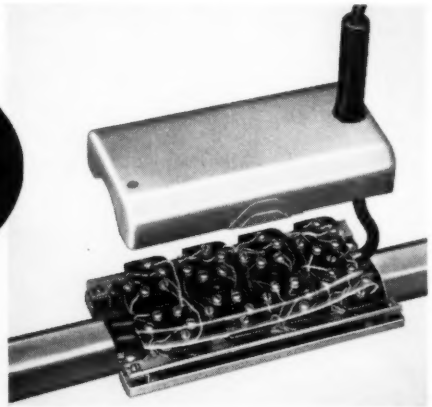
Elected to the company's board of directors were Mr. Glick and James H. Murray of Birdsboro.

Other officers and board members are: Secretary, Oscar Y. Schmeck, Birdsboro; treasurer, Morris E. Brown, Birdsboro R. D., and William H. Reifsnyder, Boyertown, and C. Robert Manwiller, Birdsboro.

Mr. Stoltzfus said the Conestoga Telephone & Telegraph Co. now operates eight automatic exchanges with 13,440 stations in an area that includes Birdsboro, Boyertown, Bally, Morgantown, Yellow House, Sassamansville, Topton and Oley.

at last! a low cost MULTIPLE TERMINAL BOX for Planned Telephone Systems





Designed to accept as many as four type 44 terminal blocks, Wiremold's new 2644T Multiple Terminal Box permits Planned Telephone Systems *without attaching fittings to office furniture.* Installation is easy—no new tricks or special equipment are needed. It can be hooked up to any overfloor system—and it's used with underfloor systems as well.

For a trip proof cable system, 2600 Pancake® is the flattest overfloor duct made. It's strong as a bridge, and easy to install with a few simple fittings.

Wiremold developed the first single terminal box for overfloor applications, and again is first with the multiple terminal box. For full information about these Wiremold developments, write:

THE WIREMOLD® COMPANY
HARTFORD 10, CONNECTICUT

Junior Achievement Week Set for Jan. 26-Feb. 2

Junior Achievement Week, Jan. 26 to Feb. 2, will salute the teen-agers advisers and counselling companies active in the nationwide program designed to instill a knowledge of free enterprise in U. S. youth by the simple and practical method of letting the young people conduct actual business operations.

So much has been written and said about the merits of the free enterprise system and the benefits of the American way of life that it is refreshing to consider Junior Achievement, an organization that is *doing* something to strengthen and perpetuate these values rather than merely pay lip service to them.

Junior Achievement fulfills a twofold purpose:

It builds better citizens, workers and business leaders for tomorrow by developing personal qualities of initiative and leadership in individual boys and girls.

It builds a better and stronger America of tomorrow by inculcating a practical knowledge of how our economic system works.

Junior Achievement youth organize miniature corporations, sell stock, manufacture products, sell them, and perform all the other basic operations of regular business firms. In this they are aided and guided by counsellors recruited from sponsoring companies, who give of their time, talent and effort to help build a better America for the future.

As a practical business laboratory, Junior Achievement provides boys and girls from 15 to 21 with a working knowledge of the private enterprise system. Further, it gives them the actual experience which will enable them to take a more effective part in that system as adults.

Junior Achievement is a national nonprofit educational program sponsored by business and industry and endorsed by educational, labor and civic leaders throughout the country. It provides the opportunity for young people to:

Learn how our American business system operates through actual experience.

Develop personal qualities of initiative, leadership, responsibility and teamwork which foster the teen-agers' success and make for a greater and stronger America.

Prepare themselves as tomorrow's citizens, workers, stockholders, and managers.

Nationally, the Junior Achievement program was conceived in 1919 by

Horace A. Moses, then chairman of the Strathmore Paper Co.

Today there are Junior Achievement programs operating in 115 areas and 210 communities across the nation.

Some telephone companies have been interested in sponsoring Junior Achievement programs. One such JA group is the Tel-A-Pen Co. of San Diego, Cal., which is sponsored by the Pacific Telephone & Telegraph Co. This JA company makes pen sets from miniature handset telephones. The Tel-A-Pen company carries an advertising schedule in TELEPHONY. The sponsor reports this company has been deluged with orders for the pen sets.

This information is being presented for telephone companies which might desire to sponsor Junior Achievement companies in their community.

Wisconsin Bell Installs Millionth Telephone

A green-colored telephone installed in the Wisconsin state capitol office of Gov. Vernon W. Thomson at Madison on Nov. 15, marked a noteworthy achievement for the Wisconsin Telephone Co. It became the company's one millionth telephone now in service.

Wisconsin's growth in telephones is illustrated by the fact that it took the company 64 years to reach the first half million telephones in 1946. The second half-million telephones have been added in the brief period of 11 years, a 100 per cent increase in about one-sixth the time.

In addition to the Wisconsin Telephone Co.'s one million telephones, the state also is served by nearly 342,000 telephones of 405 Independent telephone companies.

Dominion Directory of Vancouver Elects Officer

Harry T. Stevens, sales manager of Dominion Directory Co. Ltd., of Vancouver, has been elected a vice president of the company, according to an announcement by A. S. Vince, president.

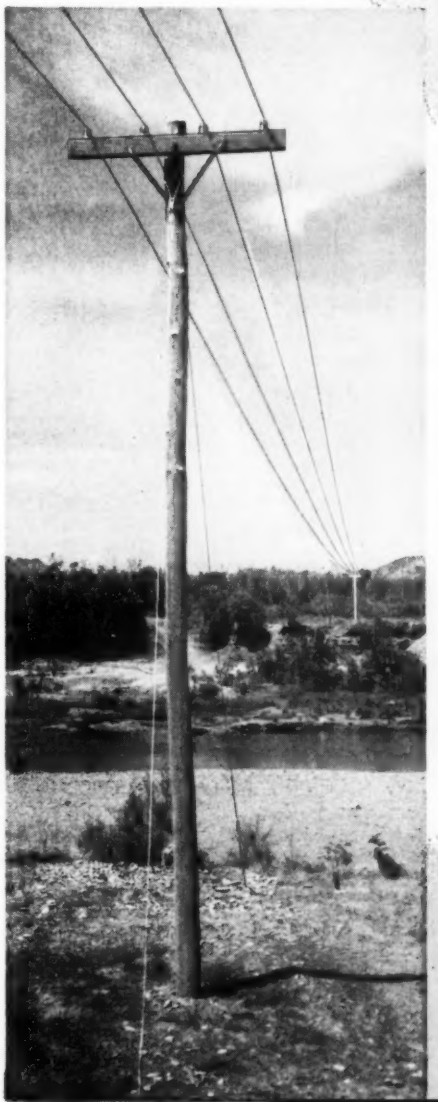
One-time advertising representative for the *San Francisco Chronicle* and a California publication, *Oil World*, Mr. Stevens was Dominion's first advertising salesman, joining the company when it was formed in 1931.

The company is the only organization of its kind in Canada offering classified telephone directory sales and publishing services to Independent telephone systems throughout the country. It covers all B. C. systems, with a total of 34 yellow pages directories, and also has clients in Ontario and Quebec.

Crapo HTL-195

FOR EXTRA LONG SPAN RURAL LINES

The NEW LOWER Resistance Extra-High Tensile Line Wire



- Better Voice Transmission
- Spans to 600 Feet or More
- Savings in Material and Labor
- Lower Ultimate Costs

Superior voice transmission qualities and extra high physical strength are combined in **Crapo** HTL-195 to provide the most practical and economical of conductors for rural telephone circuits.

This new, lower-resistance steel line wire, with a minimum breaking strength of 1800 pounds, makes possible spans to 600 feet in Heavy Loading, 650 feet in Medium Loading and 700 feet in Light Loading areas. Where terrain and other conditions permit the use of extra long spans, this means a 40% reduction in pole structures. The savings in materials and in construction costs will be apparent.

Before building new, or replacing old rural lines, investigate the possibilities of **Crapo** HTL-195! Write for complete information, including Manual of Engineering Data, No. A-195!

Pioneers in the development of high tensile and extra-high tensile steel line wire, and associated products, for the telephone industry.

INDIANA

STEEL & WIRE COMPANY, INC.
MUNCIE, INDIANA

New Speech Transmission Test Equipment to Speed Results

NEW EQUIPMENT designed at Bell Telephone Laboratories and developed by the Modac Division of Airborne Instruments Laboratory now permits Bell researchers to prove complex theories of speech transmission without building expensive test models.

The transmission of speech over wires is one of the most challenging problems in the field of engineering. The sound coming out of a telephone receiver should be a facsimile of the sound that goes into the transmitter. But, telephones may be separated by thousands of miles and the speech that enters the telephone at one end may have to pass through a number of circuits and many types of terminal and repeater equipment before it emerges from the receiver at the other end.

What happens, then, when an engineer comes up with a new theory for improving the voice quality or the efficiency of a telephone line? If, for instance, he wants to introduce but one new element into the relay system that will permit more messages to be sent over that same line, how can he be sure that the over-all system will work according to his theory?

How can he test all of the variables of distance, time, and performance characteristics of present-known equipment and anticipate their effects on his proposed changes?

The obvious method—modifying the score of relay stations according to the new theory and conducting actual tests on an existing full-length telephone line, would not only be fantastically expensive but might even disturb telephone service over parallel lines.

An alternative method—constructing a laboratory test model that would duplicate conditions on the cross-country line, is scarcely less expensive, especially in the light of modifications that might be necessary to convert it for use in future tests.

Bell Laboratories researchers developed a theory they considered might eliminate the setting up of these costly and time-consuming masses of experimental equipment. If they could get a piece of equipment that could convert their theories into computer information, a great saving of time and money could be effected in testing these theories.

Dr. Henry MacDonald and Dr. Max V. Mathews, of Bell Telephone Laboratories, brought their problem and the suggested solution to Thornwood, N. Y., where the Modac Division of Airborne Instruments Laboratory is located. As a result, a record and playback unit was conceived and is being manufactured by Modac.

This equipment reduces experimental theories on speech and speech systems to a magnetic tape and evaluates them by actually examining electrically the synthesized output of an IBM computer, as different variables and engineering concepts are introduced.

Joseph D. Mountain, director of Modac, in explaining the equipment, stated, "The Modac equipment offers a method of testing theories that is faster and less expensive than any other method and that is of almost universal application. The theory testing system couples Modac's magnetic tape record and playback unit with a high-speed electronic computer.

"In sound research, exact conditions of the proposed telephone circuit—the functions of the existing equipment plus the individual function of the equipment to be introduced—are fed onto magnetic tapes that record all of the functions as electronic impulses. The Modac equipment together with a converter combines the impulses into digits, which it feeds to the computer.

"In the computer, the digits are run through a myriad of equations simulating the circuit, and a final answer—in numerical form—is produced. This answer is then fed back into Modac equipment where it is converted into electronic impulses which exactly duplicate those of the proposed new circuitry.

"The machine then reproduces the voice through a speaker, exactly as it would sound if the voice had traveled any proposed distance."

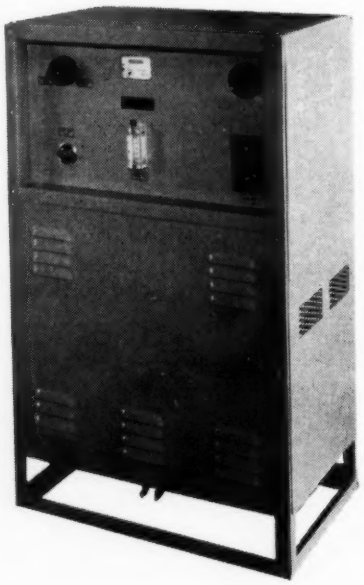
To illustrate this laboratory shortcut, Axel Jensen, director of visual and acoustics research of Bell Telephone Laboratories, speaking before the NARTB Engineering Conference in Chicago on coding and decoding speech messages, gave an interesting demonstration. He let his listeners hear simple sentences, which had been recorded by the Modac machine onto magnetic tape.

These sentences were then coded onto IBM digital tape and transformed, by

well worth investigating

S&G

MODEL A
Air Compressor Dehydrator



Exchange equipment designed to supply chemically dry air for telephone cables, aerial and underground, this unit can supply as many as 30 cables. The unit is equipped with volume recording air meter, high and low pressure alarm switches, humidstat and hour meter.

• Completely automatic in operation
• Air Purifier to eliminate oil mist
• Incorporates the latest safety devices

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NEW WRIGHT Type "C" Pull-A-Ways

THREE SIZES—1½, 3 and 6-Tons

FEATURES

- Lubricated for life
- Hooks are drop-forged
- Special alloy-steel chains
- Chain sheaves of drop-forged alloy steel
- Gear teeth cut to precision limits
- Load brake is dependable and safe
- Weights: 1½-TON, 23½ lbs. 3-TON, 36½ lbs. 6-TON, 63 lbs.

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AMERICAN CHAIN & CABLE

ACCO

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A directory for the United Telephone Company of the West, Wyoming

printed by

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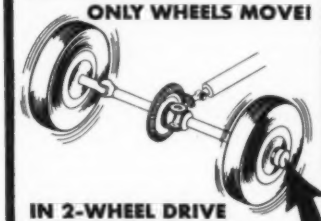
NEW... exclusive AXLE POSITIONER HUB for 4-Wheel DRIVE SERVICE TRUCKS

FREE-LOCK the dependable name for free-wheeling hubs, brings you the exclusive "axle positioner" feature. Engages your hubs instantly regardless of position of the vehicle. No rocking or moving of vehicle under any condition.

FRONT DRIVE WITH FREE-LOCK HUBS

LOW OPERATING COSTS

ALL PARTS STOP ONLY WHEELS MOVE!

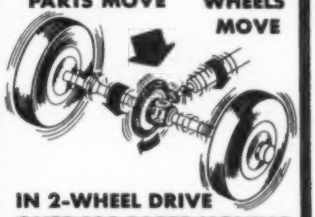


IN 2-WHEEL DRIVE NO PARTS MOVING

FRONT DRIVE — NO FREE-LOCK HUBS

HIGH OPERATING COSTS

ALL THESE PARTS MOVE — WHEELS MOVE



IN 2-WHEEL DRIVE OVER 100 PARTS MOVING —WEARING!

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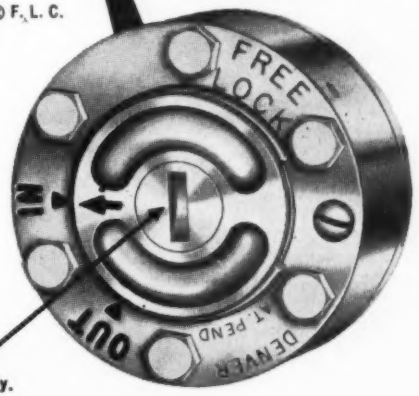

If necessary, a 1/16th inch turn engages hub instantly.

Unconditionally Guaranteed for One Year!

Available for these models

Chevrolet	International
Dodge	Land Rover
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Cut maintenance costs! Get 2-wheel drive economy, still having instant use of 4-wheel drive when needed.

See your dealer or write for *FREE* literature.

FREE-LOCK CORPORATION
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FAST, LOW-COST WAY TO INSTALL PIPE . . .

push it under streets, roads, tracks, lawns with a timesaving

GREENLEE HYDRAULIC PUSHER

Speed underground piping jobs this way. GREENLEE Pusher is one-man-operated (by hand or with power pump), portable, simple to set up and use. No tearing up of pavement, floors, lawns . . . does away with extensive ditching, tunneling, backfilling, repaving. GREENLEE Pusher cuts job time to a fraction . . . often pays for itself on first job.

Two feet per minute average pushing time

GREENLEE Pushers are available in two sizes: No. 790 for ¾" to 4" pipe . . . No. 795 for pipe over 4", concrete sewer pipe, large ducts. Average performance of No. 790, shown above with power pump, two feet per minute. Write for literature.

TOOLS FOR CRAFTSMEN

GREENLEE

GREENLEE TOOL CO.

2071 Columbia Avenue • Rockford, Illinois

an IBM 650, into punched cards. These cards, in turn, were fed to an IBM 704; onto tape; into a translator; and, finally, they were put on magnetic tape, which when played, could be compared with the original speech.

Summing up the demonstration, Mr. Jensen said, "Consider this amazing string of conversions—starting with ordinary speech, changing it into an 18-inch high stack of punched cards, then reconstructing it to get reproduced speech of good quality! It's an important step ahead that will open new avenues to electronic researchers!"

New Communications Links Set Up in Foreign Capitals

Preliminary engineering surveys are now underway to help prepare construction on an elaborate telecommunications system linking four capitals of the Baghdad Pact—Ankara, Karachi, Teheran and Baghdad, it was reported in Washington on Nov. 17.

According to present plans the new project would create the following major routes—Ankara-Baghdad, Ankara-Teheran, Baghdad-Teheran and Teheran-Karachi.

The project is an outgrowth of Special Ambassador James P. Richards' trip to the Middle East last year. The United States has agreed to pay $8,370,000 of the total cost for the new telecommunication system.

A radio-telephone link between Karachi, Pakistan, and Kabul, Afghanistan, was recently reported as nearing completion.

Obituaries

GEORGE PARKER BARNEY, 63, general plant superintendent of The Lincoln (Neb.) Telephone & Telegraph Co., died on Nov. 14 at his home in Lincoln after a long illness. He has been associated with the company at Lincoln for over 42 years.

Starting as a groundman in 1915, he joined the storeroom force as a helper in 1915 and then became a receiving clerk, shopman and storekeeper. He was a combinationman from 1919 to 1922 when he returned indoors as a testboardman and switchman.

In 1925 he became foreman at the exchange office at University Place and then was named chief clerk in 1939 and became assistant to the general plant superintendent in 1941. He was appointed general plant superintendent in May 1954.

Mr. Barney was chairman of the USITA Plant sub-committee on pole lines, conduit and wire plant and was a charter member of the Frank H. Woods chapter of the Independent Telephone Pioneer Association.

He is survived by his wife, Nettie; a son, Chauncey of Lincoln; a daughter, Mrs. Betty Belle Morey of Lincoln; a brother, two sisters and three grandchildren.

•

H. E. CLAYTON, 72, former manager of the McLeod County Telephone Co., Glencoe, Minn., died on Oct. 24, following a brief illness.

Survivors include his wife, Mina, a daughter, Mrs. Walter Frieauf, and two sons, Harold and Earl.

•

EARL J. TOURJE, general manager and secretary of the North Eastern Pennsylvania Telephone Co., Forest City, died at his home of a heart attack on Nov. 10. Starting as a lineman, he became general manager and secretary of the company in 1945.

Safety Thumb Tacks

By John A. Bracken

Bits of safety reasoning, either pointed or flat, depending upon the way you look at them:

"Being *SAFETY-minded* is the foundation of accident prevention."

•

"An everyday follow-up of a *SAFETY* program, answers the question: Is the program succeeding?"

•

"Double check often means dollars saved in the business world. Double check is also applicable to practicing *SAFETY*."

•

"Remove all *unsafe* working conditions."

The Purpose of Culture

"Culture looks beyond machinery, culture hates hatred; culture has one great passion—the passion for sweetness and light. It has one even yet greater, the passion for making them all prevail. It is not satisfied till we all come to a perfect man; it knows that the sweetness and light of the few must be imperfect until the raw and unkindly masses of humanity are touched with sweetness and light"—MATTHEW ARNOLD.

Government Intervention

"When the government tries to hasten progress by rushing in to do more and more for the people, individual self-reliance dwindles and local authority diminishes. Since 'prosperity and jobs are guaranteed' by the government—usually through inflation—the desire to work hard and be thrifty is lessened. Individual and business incentives are dulled by heavy tax loads. The well-springs of real progress — individual enterprise and capital accumulation—are choked off." — *Monthly letter of First National City Bank.*

The Law of Usage

"The more we do, the more we can do; the more busy we are, the more leisure we have."—HAZLITT.

Carl Wright, Automatic Electric Co. staff engineer, recently celebrated his 40th year with the company. Mr. Wright started in September 1917 as a draftsman, then became an equipment engineer, 1923-41. He was general manager of an Automatic Electric affiliated operating company in Colombia, South America, from 1941 to 1948. A special project engineer from 1948 to 1950 with Automatic, he then was appointed staff engineer.

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DROP WIRE
ALPHADUCT
TELEPHONE WIRE
for longer
lasting drops
String your drops with Alphaduct. They'll last longer, serve better and lower your costs on maintenance, repair and replacement.
The tough DuPont neoprene jacket resists abrasion, aging, moisture, sunlight. The Alphaduct insulation sticks to the conductor like glue.
Step-testing during every phase of manufacture insures uniform high quality, and the handy carton packaging protects the wire until you're ready to use it.
So sure are we . . . that you'll not find a longer lasting drop wire . . . that every coil is dated . . . so you can see for yourself that it lasts like we say it does.
Alphaduct neoprene jacketed drop wire is available in parallel, twisted pair and dumbbell type construction. Try it.
IT'S DATED • FOR YOUR CONVENIENCE AND PROTECTION

ALPHADUCT WIRE AND CABLE COMPANY

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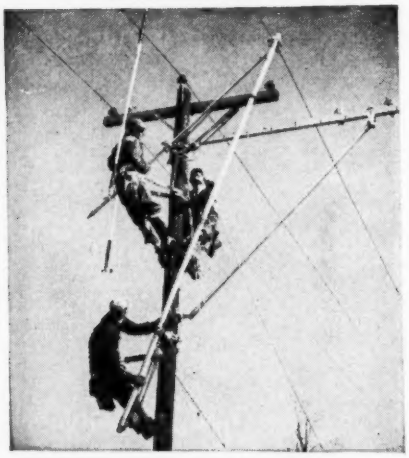
Bashlin's Quality

FOR OVER 30 YEARS



TOOLS OF SAFETY . . .

BASHLIN Quality Body Belts with the additional Nylon Safety Feature . . . Work Safely . . . Comfortably . . . with tools in easy reach.

BASHLIN Quality Alcoa Aluminum Alloy Adjustable Climbers with replaceable gaffs . . . There is nothing better anywhere!

BASHLIN'S Nylon and leather Safety Straps . . . Bashlin Quality, of course.

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CATALOG NO. 156

W. M. BASHLIN CO.
GROVE CITY, PA.

Here's A Small Company Success Story

Ranchers in California's San Benito River Valley are more than 20 miles from the nearest telephone exchange, yet they enjoy a good grade of rural telephone service at reasonable cost.

Good service to these remote ranches isn't just an accident. It is the result of hard work and ingenuity on the part of the William Butts Telephone Co.

The company was formed originally by William Butts to supply telephone service for himself and a few of his neighbors. A line was strung from the Butts ranch to Hollister, Cal., 35 miles to the north. There it connected with the Pacific Telephone & Telegraph Co. facilities at their switchboard.

As additional neighbors wanted service, the original party line became inadequate and new circuits to Hollister had to be obtained. Because of the expense and difficulty of stringing additional wire, two stackable carrier channels were installed to provide the needed circuits.

In May, 1953, William Butts retired from active operation of the company and turned the operating details over to two of his neighbors, Loren Bryan and Rex Bryan. The Bryan brothers, both University of California graduates in forestry, managed the company successfully for a year and then purchased it from William Butts. They immediately set out on an aggressive program of improving service to their existing customers and extending service to additional ranches in the area.

Loren and Rex Bryan, owners of the William Butts Telephone Co.

At the time of purchase four years ago, the telephone company had 39 subscribers—13 each on three circuits which connected to the Hollister switchboard. Today, the company has 60 toll stations—one on every ranch in the area.

When the Bryans took over, they added a third carrier channel and renovated much of the outside plant. The 0.109 galvanized iron conductors of the line to Hollister were replaced with 0.080 copper-steel conductors and the line was transposed to the R2 scheme. To take full advantage of the third carrier channel, the subscriber circuits were rearranged to provide 14-party service to each of four circuits.

The company has been using carrier since 1949 and has had very few maintenance problems. The carrier circuits to Hollister are checked twice each day by calling the Hollister operator. The resistance of each subscriber circuit is also measured each day to check for shorted or open circuits.

A Pacific Telephone & Telegraph Co. engineer assisted in installing the carrier, and a radio service man checks the tubes twice a year. Once when moisture caused a short circuit that made one of the channels inoperative, Rex Bryan made a trip to Lenkurt Electric Co. in San Carlos (about 80 miles from Hollister) and had it repaired while he waited.

Most of their maintenance problems stem from the fact that subscribers own and maintain their own drop cir-

Fig. 1. A major problem of the William Butts Telephone Co. is the California Woodpecker which enjoys perforating telephone poles.

cuits and telephone sets. The drop circuits often have insufficient clearance and are sometimes knocked down by farm machinery.

In certain sections of the valley, the terrain is very rugged and long-span construction is used. Young owls learning to fly sometimes collide with these long spans and twist them together, interrupting the service. Another always-prevalent difficulty is the California Woodpecker which seems to enjoy perforating the poles *(Fig. 1)*.

Because of the excellent service they have received, subscribers of the William Butts company have never filed a request for upgrading of service. The subscribers generally understand the special problems of the company and realize that they are receiving good service at a very reasonable cost.

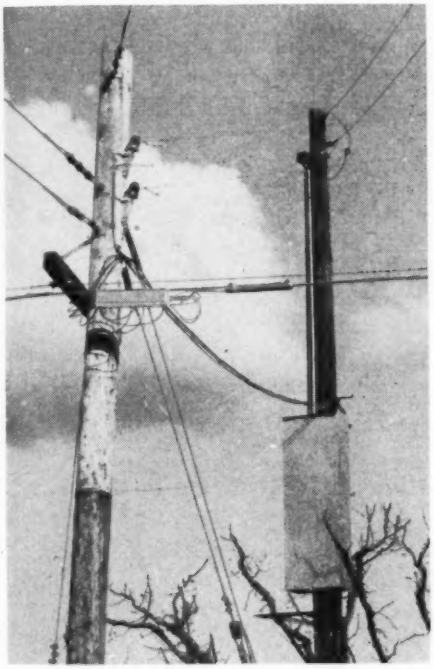


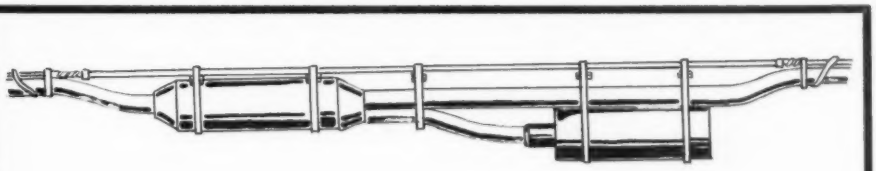
Fig. 2. Pole mounted carrier equipment at the southern edge of Hollister.

The minimum service charge applicable to all subscribers is $3.00 per month. For this amount, they are entitled to make any number of calls to anyone on their party line. Calls into Hollister or beyond, or to subscribers on other circuits of the William Butts company, are toll calls. However, the first $3.00 of toll calls are included in the minimum basic charge so that only toll charges above this amount are additional.

Although the Bryan brothers have extended a greatly improved service to every ranch in their area, they are not resting on their laurels. Early in 1958, they will install a recently purchased automatic system. Additional carrier channels will also be installed. This will permit them to offer private lines as well as standard 10-party rural serv-

CEECO LOADING COILS *in Type 124 Lead Cases*

These cases are for aerial mounting. Five foot cable stubs are standard unless otherwise specified. Stubs may be either lead or plastic cable. Special assemblies may be constructed to meet other requirements.



TYPE 124 LEAD CASE

Voice frequency coils, type 632(88MH) and 638(44MH) are primarily designed for use on two wire telephone cables. Types MF10, MF11, 641 and 642 coils are furnished for quadded interoffice and toll cables.

CEECO assemblies give "Life like" voice transmission and reception to your long cable and rural distribution wire circuits. "Life like" telephone transmission is a clear easily understandable telephone conversation over the necessary frequencies present in the voice to be heard via the telephone in the same volume as in "face to face" conversation. Telephone companies providing such quality service will increase subscribers desire to use LONG DISTANCE more often, thus increasing revenue.

WRITE US FOR ASSISTANCE ON YOUR LOADING PROBLEMS

CEECO LOADING COILS are sold by your Telephone Equipment Supplier

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Made of Soft Pliable Vinyl Foam

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Thanks for your splendid response. All orders being shipped promptly.

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CEDAR POLES
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LOW CONDUCTIVITY AND SAFER WITH PENTACHLOROPHENOL FULL-STRENGTH TREATMENT
CLEAN • DRY
LONGER LIFE
LIGHT WEIGHT
2 YARDS
MINNEAPOLIS
FINDLAY, OHIO

R. G. HALEY & CO.
SPITZER BUILDING
TOLEDO 4, OHIO

ice. Initially, they will have 18 local circuits with from one to 10 subscribers per circuit.

The William Butts Telephone Co. is proving every day that a small Independent can provide the kind of good rural service the people want, at a price they can afford to pay.

Puerto Rico, Dominican Republic O/H Link Opened

The world's third commercial over-the-horizon (O/H) microwave radio link was inaugurated on Nov. 1, marking the beginning of modern, multichannel radio communication between Puerto Rico and the Dominican Republic.

Completion of the 238-mile "electronic bridge" was announced by International Telephone & Telegraph Corp., whose U. S. research center, Federal Telecommunication Laboratories, Nutley, N. J., designed the equipment and whose overseas manufacturing, sales, and licensing subsidiary, International Standard Electric Corp., supplied it.

Similar IT&T microwave systems have already been placed in service between the Mediterranean islands of Sardinia and Minorca and between the United States and Cuba.

This latest link provides six two-way telephone channels between San Juan and Ciudad Trujillo, augmenting the existing high-frequency circuit. Another IT&T company, Radio Corp. of Puerto Rico, will operate one end of the link, while Compañía Dominicana de Teléfonos C. por A., a subsidiary of General Telephone Corp., will operate the other end.

The system was installed to meet the need for additional telephone service occasioned by the influx of new industries and increased tourist trade in the Caribbean area. The new O/H link will provide a modern and reliable means of communication between the islands.

The Sardinia-Minorca O/H link, inaugurated on Sept. 4, was the world's first to be put into commercial operation, and it made possible for the first time direct telephone service between Italy and Spain.

The United States-Cuba link, placed in commercial service on Sept. 12, marked another communication milestone by enabling television signals to be transmitted far beyond the line-of-sight limit of ordinary microwave radio links. In addition to providing more than 120 telephone channels, this system has been employed to carry such video "firsts" as a live interview with Cuba's President Fulgencio Batista and

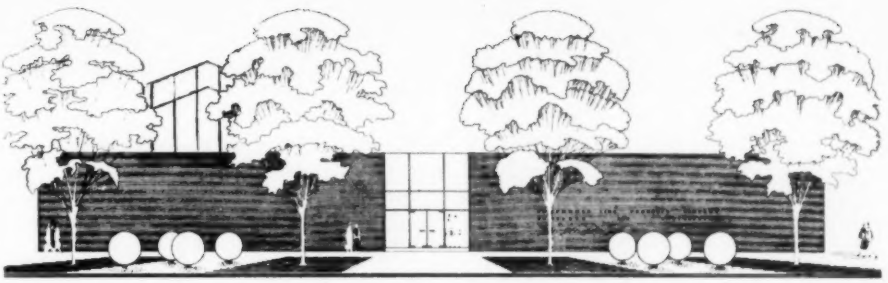
Engineers who will operate the new over-the-horizon microwave radio equipment to link San Juan, Puerto Rico, and Ciudad Trujillo, Dominican Republic, get an advance look in the Federal Telecommunication Laboratories at the feed horn employed in the revolutionary system. Left to right: G. K. Stenner, plant superintendent of Compañía Dominicana de Teléfonos C. por A., Ciudad Trujillo; Juan Castanara, chief engineer of the Radio Corp. of Puerto Rico; FTL Radio Communication Laboratory Director Armig G. Kandoian; and FTL Engineer Robert A. Felsenheld. The 238-mile link will provide six two-way telephone channels between the two Caribbean islands.

the direct telecast of the recent World Series.

O/H microwave radio transmission for the first time makes possible telephone communication beyond the optical horizon in locations where the installation of cables or repeater stations is impractical or uneconomic. Utilization of microwave frequencies in this manner is invaluable to both commercial and military communication, since many messages can be sent on a single carrier frequency.

In the more common, line-of-sight technique of microwave radio transmission, signals are sent in concentrated beams from transmitter to receiver over distances of 30-35 miles. O/H transmission takes advantage of atmospheric phenomena that "scatter" back to earth faint, but usable, signals as they are reflected from the troposphere. By employing high-power transmitters and high-gain antennas, distances of up to 600 miles have been traversed, experimentally, in this way.

In addition to the three operating links mentioned, systems under military contracts will link NATO countries in southern, central, and northern Europe. Another, the first to bridge the gap between two continents, will link Spain and Morocco for the U. S. Air Force.



Architect's sketch of front of new Preformed Line Products Co. research and development center being constructed in Cleveland. The $500,000 facility will have 20,000 square feet to house testing equipment as well as engineering and executive offices. The laboratory section is already completed with the rest scheduled to be finished around the first of 1958. Preformed manufactures armor rods, dead-ends, splices and other line accessories used primarily in the utility industry.

IT&T's Federal Electric Corp. has for some time been charged with the operation and maintenance of similar links in connection with the DEW (distant early warning) radar network across Canada and Alaska, and the "White Alice" communication network in Alaska.

Graybar Electric Announces Four New Appointments

The following appointments have been announced by Graybar Electric Co., Inc., New York, N. Y.

W. E. Iseli named manager at Eugene, in the Seattle territory, effective Nov. 1. Mr. Iseli joined Graybar in 1946 and has held positions as selector, office salesman and salesman.

C. E. Knab appointed manager at Columbus in the Cincinnati territory, effective Nov. 1. Mr. Knab joined Graybar as a student salesman in 1947, in 1948 was made a salesman and in June 1955 was appointed manager of outside construction sales at Cincinnati, the position held until his present appointment.

H. G. Cook appointed Ohio Valley district manager at Cincinnati, effective Dec. 16. Mr. Cook joined Graybar

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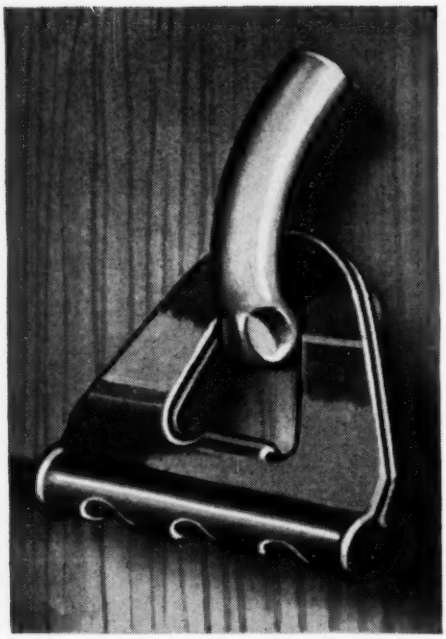

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in 1920 at Grand Rapids as a part-time messenger. Since 1922 as a full time employe, he has held such positions as order editor, counterman and operating manager, and in 1939, became branch manager of that location. In 1955 he transferred to Detroit as district manager. This August he became Mississippi Valley district manager at St. Louis, the position held until his present appointment.

M. P. Johns was named Mississippi Valley district manager at St. Louis, effective Nov. 15. Mr. Johns joined Graybar in 1939 as a city salesman in St. Louis, for five years handled various city assignments, then transferred to country salesman. In 1946 he advanced to manager, lamps and lighting. Two years later, due to an increase in lighting activity, he relinquished lamps—handling only lighting. In October 1952 he became manager, inside construction sales. In 1954 he was appointed manager at Columbus, O., the position held until his present appointment.

IBM Makes Communications, Personnel Appointments

International Business Machines Corp. on Nov. 14 announced the appointment of Dean R. McKay as director of communications. In this post he will direct all external and internal informational activities of the company.

Douglas N. Jones, district sales manager for IBM in Kansas City, succeeds Mr. McKay as director of personnel for the company's data processing division.

Mr. McKay joined IBM in 1946 and subsequently served in various sales and managerial posts, including branch manager, administrative assistant at the company's New York headquarters, and district manager. He was named assistant sales manager in 1954, and regional sales manager the following year. In 1956 he was promoted to executive assistant in the office of the president, and later that year was appointed director of personnel for the data processing division. Mr. McKay is a graduate of the University of Washington and attended the University of Colorado.

Mr. Jones, an alumnus of the University of Oklahoma, joined IBM in 1940. Prior to being named district manager in Kansas City last January, Mr. Jones had served in various sales capacities including branch manager in IBM's Oklahoma City and Kansas City offices.

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"The great law of culture is, Let each become all that he was created capable of being; expand, if possible, to his full growth; resisting all impediments, casting off all foreign, especially all noxious adhesions, and show himself at length in his own shape and stature be these what they may."—CARLYLE.

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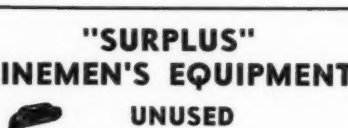

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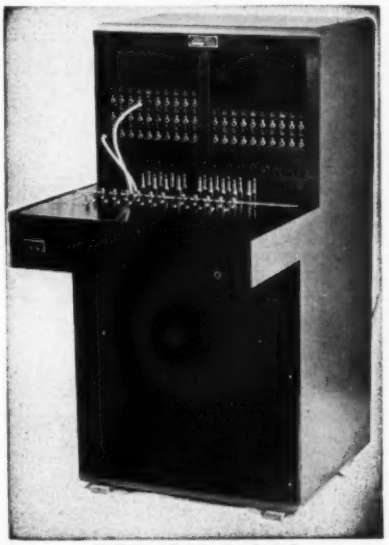

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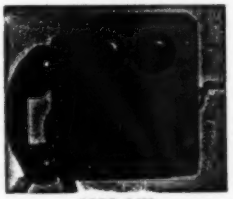

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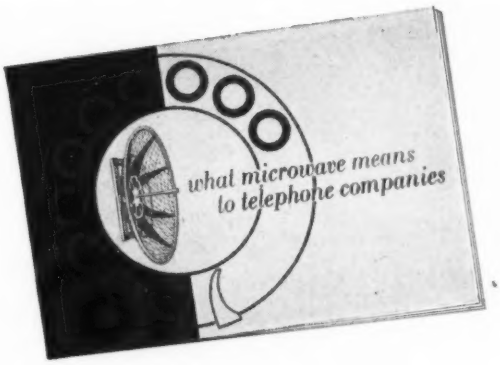

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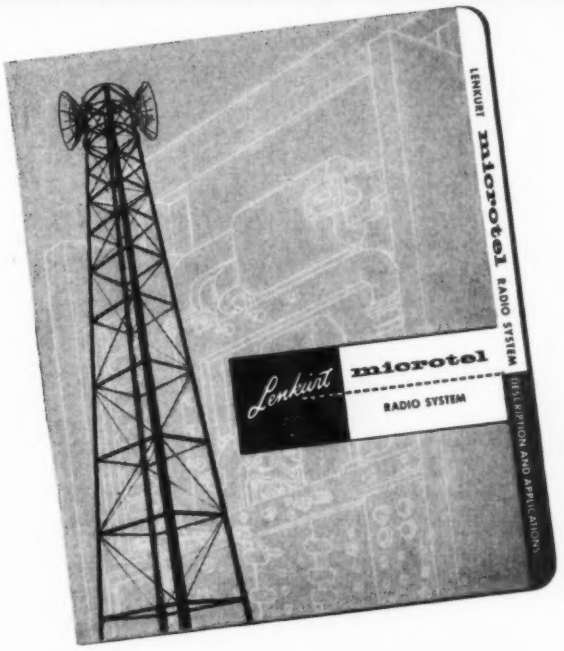

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